

# A TAXONOMIC REVISION OF THE TINISSINAE OF THE WORLD (LEPIDOPTERA : TINEIDAE)

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## CONTENTS

	<i>Page</i>
SYNOPSIS . . . . .	255
INTRODUCTION . . . . .	255
ACKNOWLEDGEMENTS . . . . .	256
ABBREVIATIONS . . . . .	256
CHECKLIST OF TINISSINAE . . . . .	256
GEOGRAPHICAL DISTRIBUTION . . . . .	257
BIOLOGY . . . . .	257
PHYLOGENY . . . . .	257
MORPHOLOGY . . . . .	259
TINISSINAE GOZMÁNY & VÁRI . . . . .	261
KEY TO MALE TINISSINAE BASED ON GENITALIA . . . . .	263
KEY TO FEMALE TINISSINAE BASED ON GENITALIA . . . . .	264
<i>Tinissa</i> Walker . . . . .	266
<i>Leptozancla</i> Meyrick . . . . .	297
REFERENCES . . . . .	299
INDEX . . . . .	300

## SYNOPSIS

The subfamily Tinissinae (Lepidoptera) and its constituent genera *Tinissa* Walker and *Leptozancla* Meyrick are redescribed and redefined. Thirty-four species are described, sixteen of them new; one new subspecies is described and two new synonyms are established. Two species are transferred to *Tinissa* from other genera. Keys to the species are given and the possible phylogeny of the subfamily is discussed.

## INTRODUCTION

THE subfamily Tinissinae was erected by Gozmány & Vári (1973). It contains two genera, *Tinissa* Walker and *Leptozancla* Meyrick, with thirty-two and two species respectively. The group is exceptional within the Tineidae in that the juxta of the male is usually extensively modified and usurps the function of the valves which are actually lost in *Leptozancla*. This feature was not noticed by Diakonoff (1967) or Gozmány & Vári (1973).

All primary types except three have been examined; in these three cases paratopotypes were available or the primary type had been adequately described and illustrated.

Size measurements given are double the distance from the wing apex to the centre of the thorax.

The terminology used in descriptions of male and female genitalia follows Klots (1956).

Genitalia dissections were made and subsequently mounted in conventional fashion; in this group, however, it is necessary to separate the uncus from the valve-juxta complex in order to view it from the ventral side. Male genitalia dissections therefore involved cutting the vinculum laterally and severing the membrane anterior to the tip of the subscaphium and 'unrolling' the genitalia; the uncus is thus viewed from the ventral side and the valve-juxta complex and saccus from the dorsal side. Chlorazol Black E was used for staining preparations and Euparal was employed as a mounting medium.

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#### ABBREVIATIONS

BMNH	British Museum (Natural History).
MAK	Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn.
MNHN	Muséum National d'Histoire Naturelle, Paris.
RNH	Rijksmuseum van Natuurlijke Historie, Leiden.
TM	Transvaal Museum, Pretoria.
USNM	National Museum of Natural History, Smithsonian Institution, Washington.

#### CHECKLIST OF TINISSINAE

<b>TINISSA</b> Walker	<i>palmodes</i> Meyrick
<b>POLYMNESTRA</b> Meyrick	<i>parallela</i> sp. n.
<i>albipuncta</i> sp. n.	<i>philippinensis</i> sp. n.
<i>amboinensis</i> sp. n.	<i>phrictodes</i> Meyrick
<i>araucariae</i> sp. n.	<i>poliophasma</i> Bradley
<i>bakeri</i> sp. n.	<i>polysema</i> Zagulajev
<i>baliomicta</i> Meyrick	* <i>polystacta</i> (Meyrick)
<i>chalcites</i> sp. n.	† <i>perilithias</i> (Meyrick)
<i>chaotica</i> sp. n.	<i>rigida</i> Meyrick
<i>cinerascens</i> Meyrick	<i>chloroplocama</i> Meyrick syn. n.
<i>convoluta</i> sp. n.	<i>heterograptia</i> Meyrick syn. n.
<i>cultellata</i> (Gozmány & Vári) comb. n.	<i>ruwenzorica</i> Gozmány
<i>distracta</i> Meyrick	<i>spaniastra</i> Meyrick
<i>dohertyi</i> sp. n.	<i>torvella torvella</i> Walker
<i>errantia</i> sp. n.	<i>torvella mysorensis</i> subsp. n.
<i>eumetrota</i> Meyrick	<i>transversella</i> (Walker) comb. n.
<i>goliath</i> sp. n.	<b>LEPTOZANCLA</b> Meyrick
<i>indica</i> sp. n.	<b>PHILAGRIAS</b> Meyrick
<i>insignis</i> Zagulajev	* <i>talaroscia</i> Meyrick
<i>insularia</i> sp. n.	<i>zelotica</i> (Meyrick)
<i>kidukaroka</i> sp. n.	*paralectotype only examined
<i>krakatoa</i> sp. n.	†holotype not examined

## GEOGRAPHICAL DISTRIBUTION

The subfamily Tinissinae contains exclusively Old World taxa. The genus *Leptozancla* is Ethiopian; its two species are known from montane localities in Kenya and Ethiopia. *Tinissa* contains five Ethiopian species; four of these are known from montane localities in Uganda and Ethiopia and one is only known from South Africa. The remaining twenty-seven *Tinissa* species are Indo-Australasian, having been collected within a zone, the western limits of which are Sri Lanka (Ceylon), south India and Sikkim, the eastern limits Taiwan, the Philippines and the Solomon Islands, and the southern limit Queensland. Several species have extensive distributions (e.g. *Tinissa insularia*, *T. rigida*) but many (e.g. *T. krakatoa*, *T. chaotica*) are known only from a single locality. It is likely that most species are under-collected. Of the 211 specimens of *Tinissa* known to me, representing 33 taxa, seven species account for 155 specimens while 15 taxa are represented by a single specimen. It is, therefore, likely that there are many more species of Tinissinae to be discovered and that present distributional records are incomplete. From the imperfect records of distribution presently available, there is a concentration of species in the Papuan region. Only five species are known from the Asian mainland. Nine species are recorded from New Guinea and fifteen from Buru to the Solomon Islands.

## BIOLOGY

All Tinissine species, with the exception of *Leptozancla talaroscia* and *Tinissa polystacta*, have been collected in tropical rain forest and their distributions seem to be restricted to this habitat type within about 20° north and south of the equator. No published host records exist for this group, but Meyrick, in a manuscript notebook preserved in the Microlepidoptera Section, BMNH, records (notebook no. 12, page 58) *Tinissa torvella* 'on fungus on bamboo'. Meyrick's collection contained *T. torvella*, *T. indica* and *T. insularia* determined as '*torvella*' so it is uncertain as to which species this record really relates. It is enough to suggest, however, that the group is fungivorous. Specimens of *Tinissa* have been collected in every month of the year both north and south of the equator and the species probably breed continuously. Specimens are generally rare (see comments in 'Geographical Distribution').

## PHYLOGENY

No fossil evidence is available to strengthen any phylogenetic assumptions made about this group and only morphological and geographical evidence is here taken into account. I consider the Tinissinae to have originated in Africa where the remaining species are all markedly dissimilar and where all the species with a 5-segmented maxillary palp are found. Reduction of the number of maxillary palp segments is considered to have been a single and early occurrence in the history of the group, antedating the migration of an early *Tinissa* stock to Asia. *Tinissa phrictodes* is rather different from the other Asian species; the structure of the uncus is similar to that of *T. polystacta*, suggesting that it is an early derivative from the first 'African-type' immigrant stock.

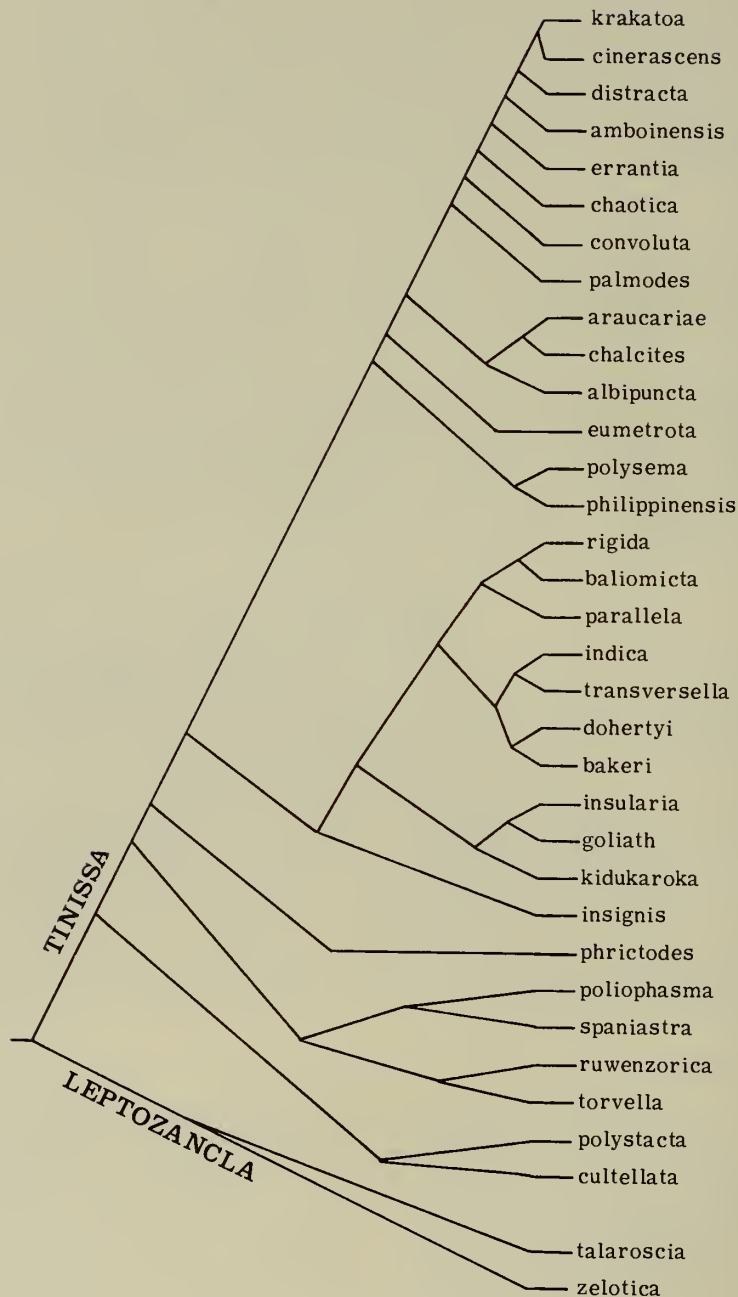


FIG. 1. Suggested phylogeny of the Tinissinae.



The occurrence of 'pouches' in the female eighth tergite, while a useful diagnostic character, seems to be of little phylogenetic significance. Species with pouches show little similarity to each other when other characteristics are considered and the structure of the pouches suggests that they have arisen independently on several occasions. Two major groups of Asian species are recognized. The first group is of four quite closely related species (*T. cinerascens*, *distracta*, *krakatoa*, *amboinensis*), remarkable for the narrowness of the male saccus, which are grouped with a series of ten species of progressively divergent genital morphology but generally with a pale wing pattern. This group is probably monophyletic and contrasts with the darker-winged second group of eleven species which form three quite well-defined species-groups. I consider *Tinissa torvella* to be a remnant of a separate invasion of Asia of a line otherwise represented by *T. ruwenzorica*. I consider *Leptozancla* to be monophyletic from the earliest Tinissine stock; its two species are widely divergent. Text-fig. 1 illustrates my concept of the phylogenetic relationships of the Tinissinae. The affinities of the subfamily remain obscure and I am, at this stage, content to think of the Tinissinae as having arisen from a generalized Tineoid-Psychoid stock.

## MORPHOLOGY

The morphology of the Tinissinae is described in detail below but comment is required on the peculiar structure of the male genitalia. Text-fig. 2 is a schematic diagram of the male genital structures of a Tinissine. Features which should be noted are the fusion of an enormous juxta with the valve and the presence of a process which arises from the membrane separating the internal surfaces of the valve and juxta. The labis should be noted, a posterior extension of the transtilla, usually close to or in contact with the aedeagus. The characteristic form of the uncus and subscaphium are also shown.

Earlier authors have had different interpretations of male Tinissine genitalia; the following table equates the terminology used.

Diakonoff (1967)	Gozmány & Vári (1973)	Present work
valva	ventral lobe of valve; hairy clavate appendage	juxta
anellus lobe; triangular hairy process	dorsal lobe of valve	process arising from mem- brane between valve and juxta
transtilla; slender process directed rostrad	transtillae	apodeme of valve
elevated bristly knob	anellus with two lobate arms	valve
—	serrate cornuti	spicules on outer surface of aedeagus
tegumen	uncus	uncus

It is apparent that the valve-juxta complex of the Tinissinae has not been noted by earlier authors who have interpreted the complex as being wholly composed of the valves. In most species, a membranous line clearly separates the valves and the juxta and there is no evidence of a medioventral division of the sclerotized portions of the complex as would be expected if the complex were composed of ventrally extended valves. In several species (e.g. *Tinissa torvella*), the juxta is reduced and not closely fused with the valves, but in several species the degree of fusion is such that it is difficult to trace the margin of the juxta.

In the female genitalia of *Tinissa spaniastra*, Gozmány & Vári's (1973) 'minute phylliform signum' is a foreign body, probably a scale.

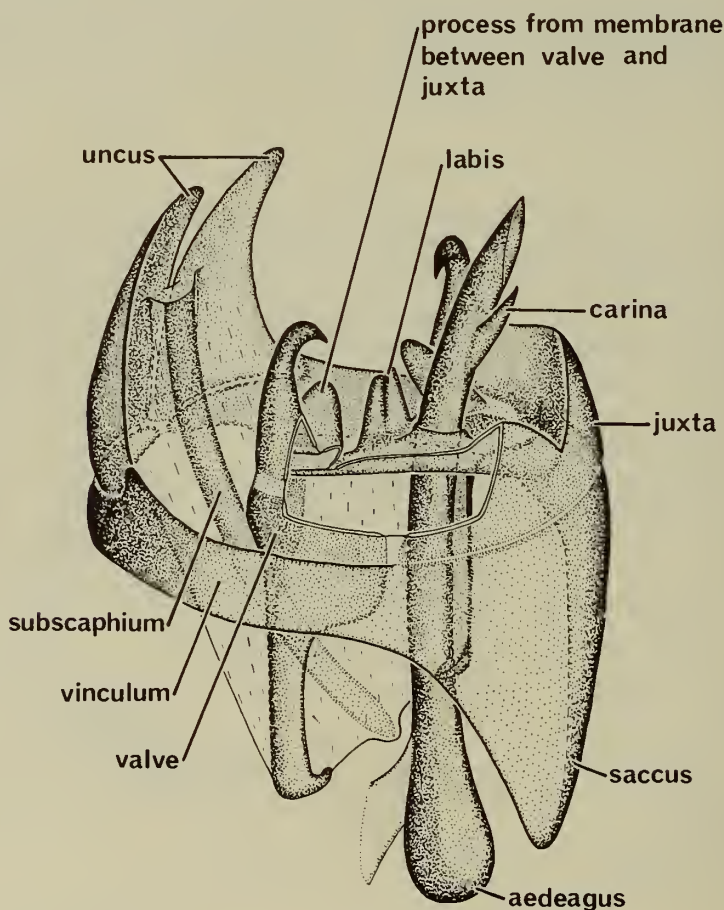


FIG. 2. Schematic diagram of male genitalia of a Tinissine.

## TINISSINAE Gozmány &amp; Vári

Tinissinae Gozmány & Vári, 1973, *Transv. Mus. Mem.* **18** : 84. Type-genus: *Tinissa* Walker, 1864.

Frons loosely covered with short, pale scales, predominantly forward-directed, convergent in midline of head. Mandible present (presence uncertain in *Leptoancla*), thinly sclerotized, four times as long as broad at base. Proboscis almost as long as second segment of labial palpus, the two galeae only loosely associated, if at all; epipharynx small, triangular, protuberant (proboscis absent and epipharynx reduced in *Tinissa polystacta*). Maxillary palpus with five short segments, folded (*Leptoancla*, *Tinissa polystacta*, *T. cultellata*), or three segments, first short, second twice as long, third 1.5 times as long as second. Three-segmented maxillary palpus with conspicuous tuft of divergent pale scales from terminal segment. Labial palpus with three segments, second and third approximately same length, first about one-third length of second; terminal segment upturned to about 60°, second segment with ventral tuft of elongate scales projecting anteriorly and with lateral bristles. Antenna extending to about one-half of fore wing costa in *Tinissa*, almost to or to apex in *Leptoancla*, ♂ with elongate cilia (Pl. 1, fig. 1), ♀ cilia shorter (Pl. 1, fig. 2) (cilia very long in *Tinissa chaotica*, reduced in length or absent in *Leptoancla zelotica*, *Tinissa ruwenzorica*, *T. poliophasma*, *T. spaniastra*; cilia short but dense in *Leptoancla talaroscia*). Scape with stiff downward-pointing pecten. Fore wing (Text-fig. 3) brownish, with or without pale (usually white or cream) spots and/or transverse striae, somewhat rectangular (narrow, apex oblique in *Leptoancla talaroscia*), 5–15 mm in length; *M* present or absent in cell; *R*<sub>5</sub> to apex or just on to termen; *R*<sub>4</sub> and *R*<sub>5</sub> separate, stalked or completely fused. With (*Tinissa*) or without (*Leptoancla*) elongate oval patch (Pl. 1, fig. 3) of small, flat, ovate scales (Pl. 1, fig. 4) on ventral surface of wing between *A*<sub>1+2</sub> and posterior margin. Hind wing with patch of rough, pale scales opposite fore wing patch, anterior to *Sc* + *R*<sub>1</sub> (absent in *Leptoancla*). Venation usually complete but *M* sometimes absent from cell. Female frenulum with two or three spines; if three, one may be shorter than other two (♀ of *Leptoancla* unknown). Hind tibia with conspicuous distal hair tuft or with smooth broad scales, first hind tarsal segment smooth-scaled (with rough, raised scaling in *Tinissa spaniastra*); mid tibia with two oblique brownish transverse bands (absent in *Tinissa cultellata*) on outer face.

GENITALIA ♂. Simple, pouch-shaped corema (Pl. 7, fig. 47) present in tergosternal membrane (absent in *Tinissa polystacta*, *T. phrictodes* and *T. chaotica*). Eighth segment well sclerotized, sternite with pair of lateral processes in *Tinissa torvella* and *T. ruwenzorica*. Saccus always large and conspicuous though sometimes narrow; vinculum extending dorsally to form an almost complete ring, tips separated by membrane. Tegumen and gnathos absent. Uncus completely divided, a pair of lobes attached to vinculum and each other by membrane (fused with vinculum in *Leptoancla zelotica*, *Tinissa cultellata* and *T. polystacta*); shape of lobes and presence or absence of processes or invaginations highly diagnostic at species level. Juxta large, closely appressed to valves, diversely modified and in many species taking over function of valves. Valves usually reduced, not as diversely shaped as juxta, absent in *Leptoancla*. Various shaped and modified process arising from membrane between valve and juxta present in most *Tinissa* species, absent in *Leptoancla*. Labides present, usually a pair of lobes, sometimes fused, dorsal to aedeagus, or strongly developed, forming posteriorly directed spines (*Leptoancla*); in several species pair of labides lobes ventral to aedeagus; labis absent in a few species. Subscaphium elongate, extending from edge of anal orifice to proximity of base of valves, usually narrow, sclerotized, conspicuous; in two species subscaphium broadened and laterally evaginated to form a pair of posteriorly directed spined processes. Aedeagus of various shapes and sizes, with or without ventral carina near apex, cornuti absent; one species (*Tinissa spaniastra*) with a line of fine spicules on outer surface of aedeagus.

GENITALIA ♀. Seventh tergite with posterior medial lobe in several species. Eighth sternite variously modified with posterior and anterior emargination, keel-shaped in several species, often setose, with or without conspicuous setae at posterior margin. Ostium similarly diverse,

at various angles to plane of eighth sternite, in several species with marked emargination of ventral lip. Antrum always present, sclerotized, often divided into two sections by membranous zone at point of junction with ductus seminalis although in several species sclerotization is continuous. Ductus bursae thin-walled but strengthened by regular transverse constrictions which may, additionally, be rugose with fine superficial pimpling; ductus bursae anteriorly with a single loop to the right. Corpus bursae with extremely thin walls, without signum. Eighth tergite variously modified; with or without posterior medial emargination; with or without various pouch formations in tergite wall or at anterior margin; with transverse ridging in *T. cultellata*; more or less setose, a row of setae of varying degrees of conspicuousness at posterior margin; with or without evagination of ventral surface to form lateral flaps around base of ovipositor. Ovipositor elongate, apophyses posteriores almost reaching tips of apophyses anteriores when ovipositor extruded; lightly sclerotized region anterior to anal papillae extending to posterior fold of ovipositor with fine transverse ridging on ventral surface.

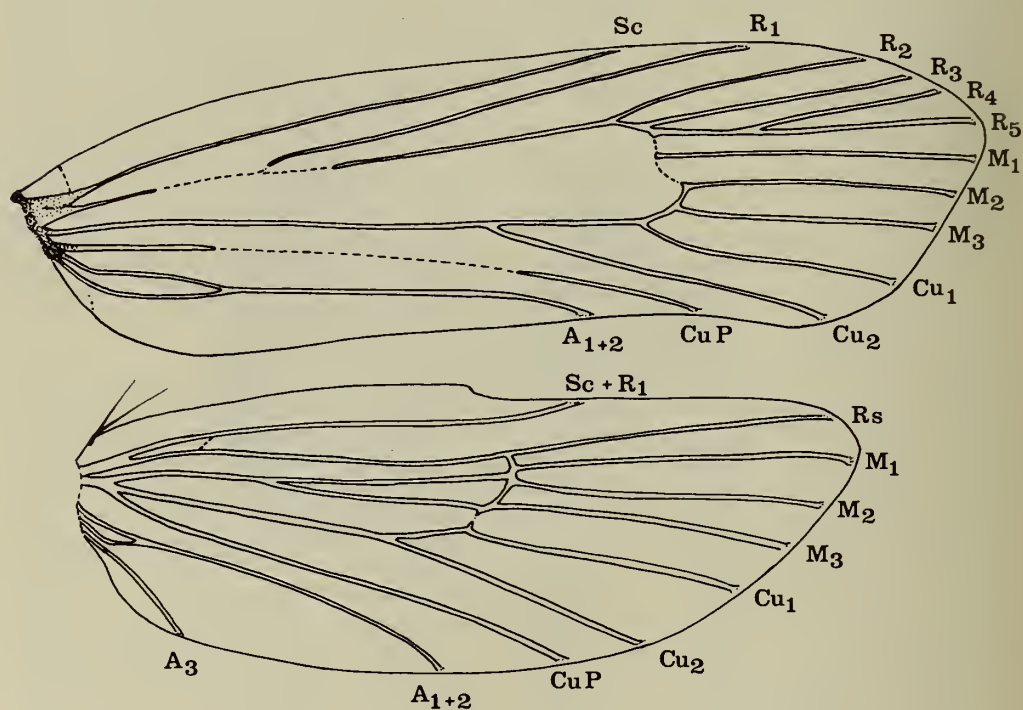


FIG. 3. Venation of *Tinissa torvella torvella* Walker, ♀, Sri Lanka.



KEY TO MALE TINISSINAE BASED ON GENITALIA

1	Valve present, apodeme visible ( <i>TINISSA</i> )	3
–	Valve absent, apodeme not visible ( <i>LEPTOZANCLA</i> )	2
2	Labides two posteriorly directed spines, juxta with distinct ventro-medial suture; aedeagus more than 1.1 mm long (Pl. 11, fig. 66)	<i>zelotica</i> (p. 298)
–	Labides four posteriorly directed spines, juxta without ventro-medial suture; aedeagus less than 0.7 mm long (Pl. 10, fig. 65)	<i>tararoscia</i> (p. 297)
3	Eighth sternite with posterior process at each corner (Pl. 10, figs 61, 63)	4
–	Eighth sternite without posterior process at each corner	5
4	Lobes of uncus with small digitate lateral process; aedeagus 0.9 mm long (Pl. 10, fig. 60)	<i>ruwenzorica</i> (p. 292)
–	Lobes of uncus without small digitate lateral process; aedeagus 1.6 mm long (Pl. 10, fig. 62)	<i>torrella</i> (p. 292)
5	Coremata present in tergosternal membrane of eighth segment	8
–	Coremata absent from tergosternal membrane of eighth segment	6
6	Tips of uncus lobes bifid, terminating in pair of large, thorn-like spines (Pl. 8, fig. 50)	<i>chaotica</i> (p. 271)
–	Tips of uncus lobes not bifid	7
7	Transtilla cowl-shaped, extended posteriorly; subscaphium rod-like anteriorly; uncus fused with vinculum; aedeagus small (0.80 × 0.06 mm) (African species)	<i>polystacta</i> (p. 294)



- Transtilla not developed; subscaphium broad, blade-like anteriorly; uncus not fused with vinculum; aedeagus large (1.10 × 0.14 mm) (Australasian species) (Pl. 9, fig. 58) . . . . . **phrictodes** (p. 289)
- 8 Aedeagus with line of fine spines or spicules on external surface (Pl. 9, fig. 59) . . . . . **spaniastra** (p. 291)
- Aedeagus smooth, or with only one or two thorn-like carinae on external surface . . . . . 9
- 9 Uncus fused with vinculum (Pl. 10, fig. 64) . . . . . **cultellata** (p. 296)
- Uncus separated from vinculum by narrow membranous zone . . . . . 10
- 10 Subscaphium evaginated to form pair of large, spined, digitate processes . . . . . 11
- Subscaphium without processes . . . . . 12
- 11 Aedeagus 1.8 mm long, with large, conspicuous carina from three-quarters, almost reaching tip (Pl. 9, fig. 55) . . . . . **indica** (p. 282)
- Aedeagus without carina, 1.1 mm long (Pl. 9, fig. 56) . . . . . **bakeri** (p. 284)
- 12 Anterior portion of saccus slender, parallel-sided and elongate, at least seven times as long as broad . . . . . 13
- Saccus triangular or, if parallel-sided, less than three times as long as broad . . . . . 17
- 13 Edge of uncus lobe invaginated to form shallow pocket . . . . . 14
- Edge of uncus lobe not invaginated . . . . . 15
- 14 Juxta approximately one-quarter length of valve (Pl. 7, fig. 48) . . . . . **amboinensis** (p. 269)
- Juxta more than half length of valve (Pl. 7, fig. 46) . . . . . **cinerascens** (p. 267)
- 15 Conspicuous inwardly directed elongate process from juxta or valve (Pl. 7, fig. 49) . . . . . **errantia** (p. 270)
- Valve or juxta without inwardly directed process . . . . . 16
- 16 Tip of uncus lobe an inwardly curved spine (Pl. 8, fig. 52) . . . . . **albipuncta** (p. 275)
- Tip of uncus lobe broad, truncate (Pl. 7, fig. 45) . . . . . **distRACTa** (p. 269)
- 17 Juxta extended dorsally into two very long, slender, curved processes, longer than the uncus . . . . . 18
- Juxta not extended into elongate processes . . . . . 19
- 18 Dorsal process from membrane between valve and juxta rectangular, with row of spines along distal edge . . . . . **rigida** (p. 277)
- Dorsal process from membrane between valve and juxta broad, semi-ovate, inner surface covered with spines . . . . . **balionicta** (p. 280)
- 19 Uncus lobes with sharp tip, row of fine spines on internal surface (Pl. 8, fig. 51) . . . . . **chalcites** (p. 274)
- Uncus lobes blunt, without fine spines on internal surface . . . . . 20
- 20 Uncus approximately 1.3 times as long as wide; aedeagus 1.4 mm long, with large carina at two-thirds and two small apical thorn-like carinae (Pl. 9, fig. 54) . . . . . **parallela** (p. 281)
- Uncus twice as long as wide; aedeagus 1 mm long, with small subterminal carina (Pl. 9, fig. 57) . . . . . **insularia** (p. 285)

## KEY TO FEMALE TINISSINAE BASED ON GENITALIA

Females of *Leptozancla* and *Tinissa bakeri*, *chaotica*, *errantia* and *ruwenzorica* are unknown.

- 1 African species . . . . . 2
- Indo-Australasian species . . . . . 5
- 2 Eighth tergite with transverse ridging, anterior margin with pouch . . . . . **cultellata** (p. 296)
- Eighth tergite without transverse ridging or anterior pouch . . . . . 3
- 3 Ostium at right angles to plane of eighth sternite; ductus bursae with large ventral sclerotized patch (Pl. 16, fig. 97) . . . . . **polystacta** (p. 294)
- Ostium oblique to or parallel to plane of eighth sternite, ductus bursae without sclerotization . . . . . 4

- 4 Ostium parallel to plane of eighth sternite, half as long as sternite; ductus bursae with fine rugose pimpling (Pl. 16, fig. 98) . . . . . *poliophasma* (p. 290)
- Ostium oblique to plane of eighth sternite, almost as long as sternite; ductus bursae without pimpling (Pl. 16, fig. 94) . . . . . *spaniastra* (p. 291)
- 5 Eighth tergite with internal or external pouch or similar deep indentation, or sclerotized fold forming pouch at anterior margin . . . . . 20
- Eighth tergite without pouch, any fold at anterior margin not sclerotized . . . . . 6
- 6 Ductus bursae with only about six regular constrictions (Pl. 15, fig. 93) . . . . . *phrictodes* (p. 289)
- Ductus bursae with at least twenty regular constrictions . . . . . 7
- 7 Distance from ostium to anterior tip of antrum one-half or less length of eighth sternite . . . . . 8
- Distance from ostium to anterior tip of antrum three-quarters or more length of eighth sternite . . . . . 10
- 8 Posterior margin of eighth tergite with deep U-shaped medial emargination . . . . . 9
- Posterior margin of eighth tergite with only slight medial indentation (Pl. 15, fig. 90) . . . . . *goliath* (p. 287)
- 9 Ventral lip of ostium with small, V-shaped medial emargination (Pl. 14, fig. 87) . . . . . *insularia* (p. 285)
- Ventral lip of ostium with large, square emargination (Pl. 15, fig. 91) . . . . . *kidukaroka* (p. 287)
- 10 Portion of antrum posterior to junction with ductus seminalis less than six times as long as wide . . . . . 12
- Portion of antrum posterior to junction with ductus seminalis nine times or more as long as wide . . . . . 11
- 11 Posterior projection of eighth sternite with dense dorsal patch of setae (Pl. 16, fig. 96) . . . . . *torvella mysorensis* (p. 294)
- Posterior projection of eighth sternite quite smooth on dorsal surface (Pl. 16, fig. 95) . . . . . *torvella torvella* (p. 293)
- 12 Conspicuous posterior lobe with short spines on seventh tergite (Pl. 12, fig. 71) . . . . . *amboinensis* (p. 269)
- Seventh tergite without posterior lobe . . . . . 13
- 13 Anterior tip of antrum extending beyond tips of posterior apophyses (Pl. 11, fig. 67) . . . . . *krakatoa* (p. 267)
- Anterior tip of antrum not extending beyond tips of posterior apophyses . . . . . 14
- 14 Portion of antrum anterior to junction with ductus seminalis as long as or longer than posterior portion . . . . . 15
- Portion of antrum anterior to junction with ductus seminalis shorter than posterior portion . . . . . 16
- 15 Ventral surface of eighth tergite folded longitudinally to form accessory flaps either side of base of ovipositor (Pl. 14, fig. 88) . . . . . *dohertyi* (p. 284)
- Accessory flaps not present (Pl. 11, fig. 68) . . . . . *cinerascens* (p. 267)
- 16 Posterior margin of eighth tergite with two deep lateral emarginations (Pl. 11, fig. 69) . . . . . *distracta* (p. 269)
- Posterior margin of eighth tergite straight or with single medial emargination . . . . . 17
- 17 Posterior margin of eighth tergite straight (Pl. 14, fig. 86) . . . . . *indica* (p. 282)
- Posterior margin of eighth tergite with medial emargination . . . . . 18
- 18 Posterior margin of eighth sternite and ventral lip of ostium emarginated to about one half (Pl. 14, fig. 89) . . . . . *transversella* (p. 283)
- Posterior margin of eighth sternite and ventral lip of ostium emarginated to less than one-quarter . . . . . 19
- 19 Ostium oblique to surface of eighth sternite (Pl. 13, fig. 83) . . . . . *rigida* (p. 277)
- Ostium at right angles to surface of eighth sternite (Pl. 13, figs 82, 84) . . . . . *baliomicta* (p. 280)

- 20 Conspicuous posterior lobe with short spines from seventh tergite . . . . . 21  
 - Seventh tergite without posterior lobe . . . . . 22  
 21 Antrum narrowed medially (Pl. 12, fig. 76) . . . . . *araucariae* (p. 273)  
 - Antrum expanded medially (Pl. 12, fig. 77) . . . . . *chalcites* (p. 274)  
 22 Antrum straight-sided, extending beyond posterior third of anterior apophyses . . . . . 23  
 - Antrum, if straight-sided, not extending beyond posterior third of anterior apophyses . . . . . 24  
 23 Pouch in eighth tergite more than three times as broad as antrum (Pl. 12, fig. 79) . . . . . *palmodes* (p. 272)  
 - Pouch in eighth tergite approximately same width as antrum (Pl. 12, fig. 75) . . . . . *eumetrota* (p. 270)  
 24 Eighth sternite heavily sclerotized and with deep emarginations either side of antrum and on anterior margin (Pl. 12, fig. 74) . . . . . *convoluta* (p. 272)  
 - Eighth sternite with normal anterior margin . . . . . 25  
 25 Antrum straight, sometimes tapering, extending beyond anterior margin of eighth sternite . . . . . 26  
 - Antrum, if straight, not extending beyond anterior margin of eighth sternite . . . . . 27  
 26 Eighth sternite with deep medial, transverse fold, posterior half of sternite projecting beyond edge of fold (Pl. 13, fig. 81) . . . . . *philippinensis* (p. 277)  
 - Eighth sternite not folded (Pl. 13, fig. 80) . . . . . *polysema* (p. 276)  
 27 Antrum bulbous, maximum diameter about half width of eighth sternite at widest point of antrum (Pl. 12, fig. 78) . . . . . *albipuncta* (p. 275)  
 - Antrum diameter one-third or less width of eighth sternite measured in same plane as antrum diameter . . . . . 28  
 28 Pouch in eighth tergite one eighth from anterior margin, as broad as maximum width of antrum (Pl. 15, fig. 92) . . . . . *insignis* (p. 288)  
 - Pouch at anterior margin of eighth tergite, more than twice as broad as maximum width of antrum (Pl. 14, fig. 85) . . . . . *parallela* (p. 281)

### TINISSA Walker

*Tinissa* Walker, 1864, *List specimens lepid. Insects Colln Br. Mus.* **29** : 780. Type-species:

*Tinissa torvella* Walker, 1864, *ibidem* **29** : 780, by monotypy.

*Polymnestra* Meyrick, 1927, *Exot. Microlepidopt.* **3** : 331. Type-species: *Polymnestra perilitias*

Meyrick, 1927, *ibidem* **3** : 331, by monotypy. [Synonymized by Gozmány & Vári, 1973 : 85.]

*Tinissa* Walker; Meyrick, 1928 : 424 [redescription].

*Tinissa* Walker; Fletcher, 1929 : 182 [type-species].

*Polymnestra* Meyrick; Fletcher, 1929 : 224 [type-species].

*Tinissa* Walker; Diakonoff, 1955 : 127 [key to Papuan species].

*Tinissa* Walker; Diakonoff, 1967 : 278 [key to Philippine species].

*Tinissa* Walker; Gozmány & Vári, 1973 : 85 [redescription].

Mandible present; proboscis present, almost as long as second segment of labial palpus, absent in *T. polystacta*. Maxillary palpus usually three-segmented but with five segments in *T. polystacta* and *T. cultellata*. Antennae extending to about one-half of forewing costa, elongate cilia in male (Pl. 1, fig. 1), shorter cilia in female (Pl. 1, fig. 2), cilia very long in *T. chaotica* (♂) and reduced in length or absent in *T. ruwenzorica*, *poliophasma* and *spaniastra*. Fore wing (Text-fig. 3) somewhat rectangular, 5-15 mm in length; *M* present or absent in discal cell; *R*<sub>5</sub> to apex; *R*<sub>4</sub> and *R*<sub>5</sub> separate, stalked or completely fused. Elongate oval patch (Pl 1, fig. 3) of small, flat, ovate scales (Pl. 1, fig. 4) on ventral surface of fore wing between *A*<sub>1</sub> + <sub>2</sub> and posterior margin. Hind wing with patch of rough, pale scales opposite fore wing patch, anterior to *Sc* + *R*<sub>1</sub>. Venation usually complete but *M* sometimes absent from cell. Hind tibia with conspicuous distal hair tuft, first hind tarsal segment smooth-scaled (with rough, raised scaling in *T. spaniastra*).

GENITALIA ♂. Corema present in eighth segment of all but three species. Saccus large and triangular or long and slender. Uncus separated by membrane into pair of lobes attached to vinculum by narrow membranous band at anterior margin, fused to vinculum in *T. cultellata* and *polystacta*. Valve more or less reduced in most species; most species with digitate process arising from membrane between valve and juxta. Labides present in most species, a pair of (often fused) lobes dorsal to aedeagus, in several species extended to form ventral lobes.

GENITALIA ♀. See description for Tinissinae (p. 261) (the female of *Leptozancla*, the only other known genus of the subfamily, is unknown).

REMARKS. See remarks for Tinissinae (p. 263).

### *Tinissa krakatoa* sp. n.

(Pl. 2, fig. 5; Pl. 11, fig. 67)

♂ unknown.

♀. 18 mm. Head white. Labial palpus whitish, second segment brown above in basal half, tuft whitish with few brown streaks; terminal segment with brown subapical spot on dorsal surface, line of brown scales from apex to two-thirds on ventral surface. Thorax and tegula white, tegula brown anteriorly. Fore wing light ochreous brown heavily marked with whitish-ochreous coalescing transverse striae, termen darker; fringe light brown. Hind wing light grey-brown with a purplish sheen; fringe lighter, scales whitish at base. Legs whitish, hind tibial tuft ochreous cream. Fore leg light brown above, tibia and first two tarsal segments with deep brown streak on inner face. Mid tibia with two oblique light brown streaks on outer face, first tarsal segment with brown dot above. First hind tarsal segment with brown dot above. All spurs with brown dot below apex.

GENITALIA ♀ (Pl. 11, fig. 67). Eighth sternite shallow with deep posterior medial emargination to ostium. Ventral margin of ostium concave. Antrum funnel-shaped posteriorly, divided at three-quarters by membranous ring at point of junction with ductus seminalis. Anterior portion of antrum elongate, narrow, parallel-sided, almost reaching tips of apophyses anteriores. Eighth tergite tapered posteriorly, with small V-shaped medial emargination at tip.

REMARKS. *T. krakatoa* differs from *T. cinerascens* and *T. amboinensis* in the much longer anterior portion of the antrum which does not reach the tips of the apophyses posteriores in *amboinensis* or *cinerascens*. The female is smaller and paler than that of *amboinensis*.

DISTRIBUTION. Indonesia (Rakata I. [Krakatau]).

#### MATERIAL EXAMINED.

Holotype ♀, KRAKATAU: iv. 1933 (*Dammerman*) (genitalia slide no. 19750; BMNH).

### *Tinissa cinerascens* Meyrick

(Pl. 2, figs 6, 7; Pl. 7, figs 46, 47; Pl. 11, fig. 68)

*Tinissa cinerascens* Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 476. LECTOTYPE ♀, NEW GUINEA: Louisiade Archipelago, Rossel I., 1905 (*Meek*) (genitalia slide No. 19786; BMNH), here designated [examined].

*Tinissa cinerascens* Meyrick; Diakonoff, 1955 : 128 [key].

♂. 13–15 mm. Pattern similar to ♀ but generally lighter, dark spots on fore wing costa not as frequent. Hind wing light greyish-ochreous, darker towards apex with some white



maculae, the largest subapical on costa. Fore and hind wing fringes ochreous-whitish, tinged with grey at fore wing termen.

♀. 19–23 mm. Head and labial palpus whitish, vertex tufts light brown; second segment of labial palpus dark brown above, tuft mixed white and brown, third segment with few brown scales at base, oblique blackish brown band at one half. Antenna ochreous-whitish, first segment with brown scales above, scape white. Thorax and tegula whitish, tegula brown anteriorly and with broad brown medial band. Fore wing light ochreous brown heavily marked with ochreous-whitish such that brown ground colour remains as scattered transverse striae; terminal line dark brown. Fringe grey, scales at termen brownish basally. Hind wing brownish grey, paler maculae among darker spots at apex; fringe ochreous-whitish. Legs whitish, hind tibial tuft ochreous. Fore leg dark brown above to first tarsal segment, second and fourth segments with dark brown rings. Mid tibia with two oblique dark brown bands on outer face, first and fourth tarsal segments ringed with dark brown at distal end. Hind tarsal segments one to four marked with dark brown above. All spurs with dark brown spot below apex.

GENITALIA ♂ (Pl. 7, figs 46, 47). Corema present in eighth segment. Saccus narrow, elongate, expanded anteriorly. Uncus broad, tips rounded with small lateral invagination. Subscaphium broad, setose posteriorly. Valves triangular, juxta forming conspicuous posterior lobe fused to each; process from membrane between valve and juxta present as lobe at tip of each valve. Aedeagus narrow, elongate, without carina.

GENITALIA ♀ (Pl. 11, fig. 68). Eighth sternite rather square, rounded either side of terminal ostium. Ventral margin of ostium with deep U-shaped emargination. Antrum funnel-shaped posteriorly, divided at one half length of eighth sternite by narrow, membranous ring at point of junction with ductus seminalis; anterior portion of antrum narrow, straight-sided, 2.5 times as long as posterior. Ductus bursae narrow, regular constrictions closely spaced. Eighth tergite truncate.

REMARKS. The invagination of the tip of the uncus and the presence of a process between the valve and juxta separate males of this species from those of *T. distracta*. Females may be separated by their more elongate posterior portion of the antrum, narrow ductus bursae and truncate eighth tergite. Females lack the lobe from the seventh tergite present in *T. amboinensis*, the male of which has a much smaller juxta than *T. cinerascens*.

DISTRIBUTION. Buru, New Guinea (Waigeo I., New Guinea, St Matthias Group, Louisiade Archipelago, Green Is. – Nissan I.), Australia (Queensland).

#### MATERIAL EXAMINED.

Paralectotypes, 2 ♂, 2 ♀, data as lectotype, 1 ♂ as lectotype but Sudest [Tagula] I. (genitalia slide nos. 12288, 19723, 19787; BMNH).

NEW GUINEA: 1 ♀, Waigeo I., Camp Nok, 2500', iv. 1938 (*Cheesman*) (genitalia slide no. 19726); 1 ♀, Hydrographer Mts, 2500', iii. 1918 (*Eichhorn*); 1 ♀, Milne Bay (*Meek*) (genitalia slide no. 19725); 2 ♀, Louisiade Archipelago, St Aignan I., 1897 (*Meek*) (genitalia slide no. 19711); 1 ♀, St Matthias I., vi. 1923 (*Eichhorn*) (genitalia slide no. 19724); 1 ♂, Green Is., Nissan I., viii–ix. 1924 (*Eichhorn*) (genitalia slide no. 19718).

AUSTRALIA: 4 ♀, Queensland, Cedar Bay, 1894 (*Meek*) (genitalia slide nos. 12287, 19794).

BURU: 2 ♀, below 1000', 1892 (*Doherty*) (genitalia slide nos. 12117, 19727).

All specimens in BMNH.



*Tinissa distracta* Meyrick

(Pl. 2, figs 8, 9; Pl. 7, fig. 45; Pl. 11, fig. 69)

*Tinissa distracta* Meyrick, 1916, *Exot. Microlepidopt.* 1 : 615. LECTOTYPE ♀, INDIA: Assam, Khasi Hills, xii. 1906 (genitalia slide no. 19779; BMNH), here designated [examined].

♂. 15-16 mm. Pattern similar to ♀ but fore wing even lighter, dark line at termen interrupted. Hind wing silky white, few dark brown maculae near apex, fringe white.

♀. 18-20 mm. Head and labial palpus whitish with few brown scales in vertex tufts; upper surface of second segment of labial palpus brown, brown subapical band on third segment. Antenna white, brown scales above on first segment. Thorax and tegula whitish, tegula brown anteriorly. Fore wing light ochreous brown almost obliterated by ochreous whitish fine transverse striae with larger spots at costa and end of cell, dark brown line at termen; fringe whitish, grey-brown at termen, terminal scales brown at bases. Hind wing light grey, whitish maculae towards apex; fringe whitish. Legs whitish, tuft of hind tibia tinted light ochre. Fore tarsi blackish brown above but third and fifth segments white. Mid tibia with two small blackish brown streaks on outer face; first and fourth tarsal segments banded with blackish brown distally. Hind tarsus with blackish brown bands at end of first and covering fourth segment, some brown at tip of third and proximal end of first segment. All spurs with blackish brown dot below apex.

GENITALIA ♂ (Pl. 7, fig. 45). Corema present in eighth segment; saccus elongate, narrow, clubbed at anterior end, more than twice as long as uncus. Uncus broad, somewhat truncate. Valve large, fused with juxta which forms posterior and inner surface of fused complex. Juxta with two small conical projections on inner face, inner edge serrate below apex; labides present as pair of lightly sclerotized lobes against ventral surface of anellus. Aedeagus slender, elongate, two very small carinae below apex.

GENITALIA ♀ (Pl. 11, fig. 69). Eighth sternite rectangular, slightly produced posteriorly either side of terminal ostium. Antrum a little longer than eighth sternite, divided by membranous ring at point of junction with ductus seminalis; posterior section tubular, anterior section tapered. Regular constrictions of ductus bursae coarse. Eighth tergite with two deep lateral emarginations and a very small medial emargination posteriorly.

REMARKS. *T. distracta* is allied to *T. cinerascens* and externally very similar, but female *cinerascens* lack lateral emarginations of the eighth tergite; the portion of the antrum anterior to the junction with the ductus seminalis is three times the length of the posterior portion, not half as long as in *distracta*. Male *distracta* lack the lateral invaginations of the uncus to form a pair of pouches present in *cinerascens*.

DISTRIBUTION. India, Bali.

## MATERIAL EXAMINED.

Paralectotypes, 6 ♂, data as lectotype, x, xi, xii. 1906, iii. 1907(3) (genitalia slide nos. 19731, 19791; BMNH).

INDIA: 1 ♂, Assam, Khasi Hills, x. 1895 (*Doherty*) (BMNH).

BALI: 1 ♂, 1896 (*Doherty*) (genitalia slide no. 19741; BMNH).

*Tinissa amboinensis* sp. n.

(Pl. 2, figs 11, 12; Pl. 7, fig. 48; Pl. 11, fig. 70; Pl. 12, fig. 71)

♂. 15 mm. Head, labial palpus and antenna whitish, brownish scales above eye and in tuft of second segment of labial palpus. Labial palpus brownish above on outer face, terminal

segment with ill-defined outer brown spot at two-thirds. Thorax and tegula whitish, tegula light brown anteriorly. Fore wing light greyish brown, darker at termen, densely flecked with yellowish white; fringe light greyish ochreous. Hind wing yellowish white, brownish on veins and at apex; fringe cream. Legs damaged; mid tibia with two oblique light brown bars on external face, first tarsal segment with light brown medial band, similar band at tip of third and base of fourth. First and second hind tarsal segments (remainder lost) with light brown bands towards tips. All spurs with dark brown spot below apex.

♀. 23 mm. Head and labial palpus whitish, badly rubbed. Second segment of labial palpus greyish brown above and on outer face, tuft streaked with greyish brown; third segment distally brown from one-half, basal brown spot on outer face. Antenna ochreous, first and second segment brown above, scape whitish. Thorax and tegula rubbed. Fore wing greyish brown with lighter, ochreous, transverse striae, white scales at base, series of large cream spots along costa; fringe greyish brown. Hind wing greyish brown, paler maculae at apex; fringe light greyish brown, scales whitish basally. Legs damaged, ochreous-whitish, hind tibial tuft dark brown. Mid tibia dark brown above, first tarsal segment with two brown spots above. Hind tarsus with brown band on first segment; fifth, fourth and tip of third segment brown.

GENITALIA ♂ (Pl. 7, fig. 48). Corema present in eighth segment. Saccus narrow, elongate, anteriorly expanded. Uncus broad, tips rounded with small lateral invagination. Subscaphium broad. Valve large, juxta forming conspicuous lobe at tip. Inner lobe from membrane between valve and juxta with inwardly directed thorn-like protuberance. Aedeagus elongate, narrow.

GENITALIA ♀ (Pl. 11, fig. 70; Pl. 12, fig. 71). Seventh tergite produced posteriorly to form conspicuous lobe clothed with spine-like scales. Eighth sternite tapered, rounded at tip and medially emarginate to ostium. Ventral margin of ostium shallowly emarginate. Antrum elongate, 1.5 times as long as eighth sternite, divided by membranous ring at point of junction with ductus seminalis at two-thirds posteriorly. Eighth tergite with small, shallow V-shaped emargination at tip.

REMARKS. The lobe from the seventh tergite separates the female of this species from that of *T. cinerascens* which is much paler and narrower-winged. Males differ from those of *cinerascens* in having much smaller juxtal lobes at the tip of the valves and a more elongate aedeagus.

DISTRIBUTION. Moluccas (Ambon I.).

#### MATERIAL EXAMINED.

Holotype ♀, AMBON I. (Amboyna): 1892 (*Doherty*) (genitalia slide no. 19737; BMNH).

Paratype ♂, data as holotype (genitalia slide no. 19798; BMNH).

### *Tinissa errantia* sp. n.

(Pl. 2, fig. 10; Pl. 7, fig. 49)

[*Tinissa baliomicta* Meyrick; Diakonoff, 1967 : 279, figs 423, 776, 778 (partim - 1 ♂ only). Misidentification.]

♂. 13 mm. Head, labial palpus and antenna white, first antennal segment with some brown scales above. Second segment of labial palpus with brown longitudinal line above, few brown scales in tuft; apical segment missing. Thorax and tegula whitish, light brown anteriorly. Fore wing yellowish white, few light brown transverse striae, dark brown marks at termen, two oblique brown basal lines to one-half of wing (inner line obscured in illustration);

fringe whitish, light greyish brown at termen. Hind wing white, veins yellowish, dark brown spots at apex; fringe white. Legs whitish, hind tibial tuft light yellowish brown. Fore tibia brown above, first tarsal segment with brown medial spot above; fourth tarsal segment brown, brown scaling extending on to third and fifth segments. Mid tibia with two light brown oblique bands on outer face; first tarsal segment with medial brown band, similar band on tip of third and base of fourth segment. Hind tarsus with brown medial band on first segment, brownish streak on under surface from band to tip. All spurs with brown dot below apex.

♀ unknown.

GENITALIA ♂ (Pl. 7, fig. 49; Diakonoff, 1967 : fig. 423). Corema present in eighth segment. Saccus exceptionally narrow and elongate, three times as long as valve. Uncus lobes narrow, truncate. Details of fusion of valve and juxta found impossible to interpret but juxta probably forming conspicuous inward and dorsally directed processes; small triangular inwardly directed process may be homologous with lobe from membrane between valve and juxta observed in *T. cinerascens* and other species. Labides forming pair of ventral lobes. Aedeagus as narrow as saccus and twice as long.

REMARKS. *T. errantia* differs from *T. distracta* and its allies in possessing elongate processes from the tip of the valve-juxta complex. The uncus lobes are narrower and more truncated than in *distracta* and its allies, the known males of which differ from *errantia* in having the saccus expanded anteriorly. The holotype of *errantia* was described by Diakonoff (1967 : 279) as the 'neallotype' of *T. baliomicta*, a species not closely allied to *distracta*. The illustrations by Diakonoff (1967: figs 776, 778) of the right hand side of the holotype are totally misleading as the right fore wing is bent, the distal half in deep shadow and appearing black.

DISTRIBUTION. Philippines (Luzon I.).

#### MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Luzon I., Mt Makiling (*Baker*) (genitalia slide no. 5265 [Diakonoff]; USNM, Washington).

### *Tinissa chaotica* sp. n.

(Pl. 3, fig. 13; Pl. 8, fig. 50)

♂. 16 mm. Head rubbed. Labial palpus yellowish, tuft of second segment streaked with light greyish brown, second segment brown above; terminal segment with brown dot on outer surface, below apex, some brown scales scattered towards base. Antenna ochreous-whitish, cilia three times width of flagellar segments. Thorax and tegula rubbed, whitish-ochreous. Fore wing light brown with densely packed ochreous-whitish transverse striae, darker brown at termen; fringe brownish white. Hind wing white, yellowish on veins, greyish brown at termen; fringe whitish. Legs whitish, hind tibial tuft tinted ochreous, slightly greyish beneath. Fore tibia dark brown above, first tarsal segment with brown dot above. Mid legs rubbed and damaged. Hind tarsus with pale yellowish brown diffuse mark at three-quarters on first segment, fourth segment with few yellowish scales.

♀ unknown.

GENITALIA ♂ (Pl. 8, fig. 50). Corema absent from eighth segment. Saccus elongate, rectangular. Uncus tapered, setose, each lobe terminating in two heavily sclerotized spines. Valve short, rounded, with flap-like inwardly directed lobe from tip. Juxta produced posteriorly into two sclerotized points with U-shaped medial emargination a little broader than diameter of aedeagus, dorsally extended into two enormous processes with clubbed and spined tips

which almost reach apex of uncus in undissected preparation. Labides forming pair of slender, elongate lobes dorsal to aedeagus, one-half length of uncus. Aedeagus slender, truncate.

REMARKS. Although externally similar to *T. errantia*, *distracta* and their allies, *chaotica* differs from all other known *Tinissa* species in having four tips to the uncus. The twin-pointed juxta and spined arms are similarly unusual as is the absence of coremata. This species may be distinguished externally by its very long antennal cilia.

DISTRIBUTION. Moluccas (Ambon I.).

MATERIAL EXAMINED.

Holotype ♂, AMBON I. (Amboyna): 1892 (*Doherty*) (genitalia slide no. 12286; BMNH).

Paratypes. 3 ♂, data as holotype (BMNH).

*Tinissa convoluta* sp. n.

(Pl. 3, fig. 14; Pl. 12, fig. 74)

♂ unknown.

♀. 20 mm. Head whitish. Labial palpus whitish, second segment brown above, tuft with few dark brown scales distally; apical third of terminal segment dark brown. Antenna ochreous white, scape white. Thorax and tegula very light brown, white scales on thorax posteriorly. Fore wing dark yellowish-ochreous with fine dark brown transverse striae, termen dark brown, some light marks on costa, notably towards apex; fringe dark greyish brown. Hind wing dark greyish brown, fringe lighter. Fore and mid legs white, light brown above; mid tibia with two oblique dull brown lines on outer face. Hind legs missing.

GENITALIA ♀ (Pl. 12, fig. 74). Eighth sternite broad, posteriorly emarginate to ostium, heavily sclerotized anteriorly, emarginate either side of antrum. Antrum lightly sclerotized, narrowed posteriorly, extended slightly beyond anterior margin of eighth sternite. Ductus bursae short. Eighth tergite shallowly emarginate posteriorly, posteriorly directed crescentic pouch with internal opening from near anterior margin; anterior margin produced into broad, shallow, T-shaped process covered by reflexed intersegmental membrane to form bilobed second pouch.

REMARKS. The anteriorly emarginate eighth sternite of *convoluta* is not observed in any other *Tinissa* species: the T-shaped pouch-forming process from the anterior margin of the eighth tergite is exclusively diagnostic. *T. convoluta* is externally similar to *T. cinerascens* but is slightly darker.

DISTRIBUTION. New Guinea (Bougainville I.).

MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: Bougainville I. (*Meek*) (genitalia slide no. 19749; BMNH).

*Tinissa palmodes* Meyrick

(Pl. 3, fig. 15; Pl. 12, fig. 79)

*Tinissa palmodes* Meyrick, 1917, *Exot. Microlepidopt.* 2: 89. Holotype ♀, NEW GUINEA: Setekwa R. (Snow Mts), 2-3000', 1916 (genitalia slide no. 19769; BMNH) [examined].  
*Tinissa palmodes* Meyrick; Diakonoff, 1955: 128 [key].



♂ unknown.

♀. 29 mm. Head, thorax and tegula whitish; antenna light brown, scape whitish. Fore wing light ochre flecked with medium and dark brown scales, possibly to form transverse striae (but specimen very worn), large, lighter spots at costa, conspicuous spot at two-thirds, dark scales concentrated at end of cell, dark brown serrate terminal band; fringe scales whitish, grey-tipped, darker at termen. Hind wing very light grey-brown; fringe scales whitish tipped with grey-brown. Legs yellowish white; hind tibial tuft ochreous, dark brown at tips of distal scales. Fore femur and tibia brown above, tarsus with two brown dots. Mid tibia streaked with blackish brown on outer face, tarsus marked with light brown band at distal end of first and third segments. Hind tarsus tinted with light yellow-brown. All spurs with light brown band below apex.

GENITALIA ♀ (Pl. 12, fig. 79). Eighth sternite rectangular, setose, deeply emarginate posteriorly; ostium slightly posterior to one half. Antrum long, funnel-shaped posteriorly, reaching tips of apophyses anteriores; ductus bursae short. Eighth tergite concave posteriorly, anterior margin folded into an extremely large, heavily sclerotized pouch with internal opening.

REMARKS. The excessively long antrum separates this from all other species with pouches in the eighth tergite, a feature which *palmodes* brings to the observed extreme. Allied to *T. amboinensis* which has no pouch but has a lobe from the seventh tergite. The holotype of *palmodes* has  $Cu_1$  forked 1 mm from the termen in the right hind wing.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype only.

### *Tinissa araucariae* sp. n.

(Pl. 12, figs 72, 76)

[*Tinissa chloroplocama* Meyrick; Diakonoff, 1955 : 128. Misidentification.]

♂ unknown.

♀. 23 mm. Head cream (badly rubbed). Labial palpus broken. Antenna whitish dorsally, dull buff ventrally; scape white beneath. Thorax and tegula whitish, some light brown scales medially on thorax, anteriorly on tegula. Fore wing dark, dull brown, paler maculae discernible at costal margin, two small maculae towards apex, larger maculae at one-half, three-quarters and seven-eighths; blackish brown scales at apex running into fringe which is otherwise greyish brown. Hind wing and fringe light greyish brown, veins overlaid with darker brown scales. Legs badly damaged.

GENITALIA ♀ (Pl. 12, figs 72, 76). Seventh tergite produced posteriorly to form conspicuous lobe bearing short, stout scales. Eighth sternite with shallow medial emargination: ostium terminal, ventral margin emarginate to one-fifth length of sternite. Antrum as long as eighth sternite, narrowed medially, sinuate anteriorly. Eighth tergite with concave posterior margin; posteriorly directed, heavily sclerotized pouch with ventral opening at one-quarter from anterior margin. Anterior margin of eighth tergite folded into single-lobed anteriorly directed pouch with dorsal opening.

REMARKS. *T. araucariae* is allied to *T. chalcites* but the ground colour of the fore and hind wing is much darker, the lobe of the seventh tergite shorter and broader, the eighth tergite posterior pouch not as deep, the ventral emargination of the ostium narrower than in *chalcites*; the antrum is not swollen medially as



it is in *chalcites*. Although this specimen is worn and damaged it is quite distinct. Locality details are given by Diakonoff (1952 : 8).

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: Araucaria Camp, 800 m, 26.iii.1939 (*Toxopeus*) (genitalia slide no. L 03; RNH, Leiden).

*Tinissa chalcites* sp. n.

(Pl. 3, fig. 16; Pl. 8, fig. 51; Pl. 12, figs 73, 77)

♂. 23 mm. Pattern similar to ♀.

♀. 25–29 mm. Head light brownish yellow, tufts of darker scales near eyes. Labial palpus yellowish white; second segment partly light yellowish brown above, tuft white mixed with dark brown scales, terminal segment with light brown band at base and two-thirds. Antenna light ochreous brown, scape whitish. Thorax and tegula pale yellowish brown, thorax white posteriorly. Fore wing pale ochreous brown with medium brown transverse striae, denser markings along costa, termen and at one-quarter posteriorly; fringe medium brown with few lighter scales. Hind wing pale, dull yellowish brown, darker transverse striae at apex, dull brown at termen; fringe whitish, becoming grey towards apex. Legs yellowish white, hind tibial tuft light ochreous, distal scales tipped with greyish brown. Fore leg brownish above, two brown dots on upper surface of tarsus. Mid tibia with two oblique light brown bands on outer face. Two light brown dots on upper surface of hind tarsus. All spurs with brown band below apex.

GENITALIA ♂ (Pl. 8, fig. 51). Corema present in eighth segment, eighth sternite markedly convex posteriorly. Saccus triangular, longer than wide. Uncus elongate, tips sharp, pointing outwards, line of fine spines pointing inwards from dorsal surface. Juxta enormous, forming pair of converging horn-like processes. Valve reduced, simple. Transtilla present; dorsal and ventral pairs of labides with pair of quadrangular ventrolateral labides adjacent to base of valve. Aedeagus bent at one-quarter, stout, several nodular projections on distal surface, largest just below apex.

GENITALIA ♀ (Pl. 12, figs 73, 77). Seventh tergite produced posteriorly to form conspicuous lobe bearing short, stout scales. Eighth sternite with posterior medial emargination to one-fifth; ventral margin of ostium emarginate to level of posterior margin of eighth sternite; surface of eighth sternite recessed towards ostium. Antrum as long as eighth sternite, slightly sinuate and narrowed at anterior end, swollen medially. Eighth tergite shallowly emarginate posteriorly; posteriorly directed, heavily sclerotized pouch with ventral opening at one-fifth from anterior margin which itself is rolled into a single-lobed, anteriorly directed pouch with dorsal opening; between these two pouches a pair of shallow lateral lobes.

REMARKS. *T. chalcites* is larger and paler than *T. araucariae* and has a brassy appearance; it is also allied to *T. albipuncta* (which is smaller and darker than both *chalcites* and *araucariae*), the female of which species has no spined lobe from the seventh tergite and the male of which does not have the tips of the juxta curved inwards.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: Mambare R., Biagi, 5000', i–iv. 1906 (*Meek*) (genitalia slide no. 19735; BMNH).

Paratypes. 1 ♂, 1 ♀, data as holotype (genitalia slide no. 19730; BMNH).

*Tinissa albipuncta* sp. n.

(Pl. 3, fig. 17; Pl. 8, fig. 52; Pl. 12, fig. 78)

♂. 23 mm. Pattern similar to ♀ but thorax and tegula white, streaked anteriorly with brown. Markings of labial palpus and legs accentuated in comparison with ♀.

♀. 22 mm. Head whitish, vertex light brown. Labial palpus whitish, second segment light brown above and on outer surface of tuft; terminal segment with pair of light brown bands. Antenna dull brown, scape white. Thorax and tegula light yellowish brown flecked posteriorly with white. Fore wing dark, dull brown marked with conspicuous white dots at margins, large white dot at end of cell, transverse striae towards base; fringe brownish, lighter at tornus. Hind wing light ochreous brown, darker on veins and at apex, paler maculae at apex; fringe whitish, scales brown at base. Legs whitish, hind tibial tuft ochreous, darker distally. Fore and mid leg marked with brown above, two oblique brown bands on outer surface of mid tibia. All tarsi banded with brown (? – partly obscured by fungal hyphae), spurs banded below apex.

GENITALIA ♂ (Pl. 8, fig. 52). Corema present in eighth segment. Saccus narrow, elongate. Uncus elongate, tapered, tips hooked inwards. Juxta enormous, fused to posteriorly extended vinculum, terminal lobes with inner line of heavily sclerotized dentate projections. Valve reduced, simple. Transtilla present; pair of stout, elongate labides dorsal to anellus [tips of these broken in illustrated preparation]. Aedeagus narrow, curved and elongate; small, short carina arising one-fifth from apex, small thorn-like projection below apex.

GENITALIA ♀ (Pl. 12, fig. 78). Eighth sternite with broad posterior emargination. Dorsal margin of ostium slightly concave, ventral margin with V-shaped emargination to level of dorsal margin. Antrum elongate, globose, membranous in narrow band posterior to junction with ductus seminalis; portion of antrum anterior to junction with ductus seminalis L-shaped, narrow. Eighth tergite with small posterior emargination, heavily sclerotized pouch at anterior margin with two lateral, heavily sclerotized flaps.

REMARKS. *T. albipuncta* is smaller and darker than *T. chalcites* or *T. araucariae*, the wing pattern distinctive. The ♂ juxta is better developed than in *chalcites* which lacks a carina on the aedeagus. The ♀ lacks the lobe from the seventh tergite present in *chalcites* and *araucariae*.

DISTRIBUTION. New Guinea.

## MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: Mambare R., Biagi, 5000', i-iv. 1906 (*Meek*) (genitalia slide no. 19721; BMNH).

Paratype ♂, data as holotype (genitalia slide no. 19770; BMNH).

*Tinissa eumetrota* Meyrick

(Pl. 3, fig. 18; Pl. 12, fig. 75)

*Tinissa eumetrota* Meyrick, 1926, *Exot. Microlepidopt.* 3 : 319. LECTOTYPE ♀, NEW IRELAND: xii. 1923-i. 1924 (*Eichhorn*) (genitalia slide no. 19785; BMNH), here designated [examined].

*Tinissa eumetrota* Meyrick; Diakonoff, 1955 : 128 [key].

♂ unknown.

♀. 20-22 mm. Head brownish, whitish tufts near eyes. Labial palpus whitish, second segment dark brown above, tuft streaked with dark brown, terminal segment with dark brown subapical band, basally some dark scales on upper surface. Antenna dark brown, scape whitish. Thorax and tegula dark purplish brown with white transverse medial band. Fore

wing dark purplish brown with paler transverse striae, whitish marks along costa, at end of cell, conspicuous transverse mark from posterior margin at nearly one-half; fringe greyish brown. Hind wing greyish brown with purplish sheen, paler maculae towards apex; fringe greyish brown. Legs ochreous white, tuft of hind tibia brown distally. Fore leg dark brown above, three dark brown bands on tarsus, basal band narrow, inconspicuous. Mid tibia with two dark brown oblique bands on outer face. First segment of hind tarsus with broad, dark brown band. All spurs with dark brown band below apex.

GENITALIA ♀ (Pl. 12, fig. 75). Eighth sternite triangular, setose; ostium terminal; U-shaped sclerotized ridge from dorsal side of antrum at one-half. Antrum cylindrical, as long as eighth sternite, separated into two sections of similar diameter and length by membranous ring at point of junction with ductus seminalis. Eighth tergite posteriorly truncate, more heavily sclerotized anteriorly with small, narrow but deep anteriorly directed pouch with external opening.

REMARKS. Of species with pouches in the eighth tergite, only *T. palmodes* and *T. eumetrota* have an elongate antrum. In *palmodes* the antrum is completely sclerotized; in *eumetrota* there is a membranous ring at the point of junction with the ductus seminalis. The anterior tip of the antrum does not reach the tips of the apophyses anteriores as in *palmodes*.

DISTRIBUTION. New Ireland.

#### MATERIAL EXAMINED.

Paralectotype ♀, NEW IRELAND: xii. 1923-i. 1924 (*Eichhorn*) (abdomen missing; BMNH).

### *Tinissa polysema* Zagulajev

(Pl. 3, fig. 19; Pl. 13, fig. 80)

*Tinissa polysema* Zagulajev, 1972, *Trudy zool. Inst. Leningr.* 52 : 348, figs 17a, 17b. Holotype ♀, JAVA: Baleq-Takengon, 29. ix. (*Roepke*) (genitalia slide no. 22; RNH, Leiden) [examined].

♂ unknown.

♀. 24 mm. Head yellowish white, vertex greyish brown. Labial palpus yellowish white, tuft of second segment streaked with grey, upper surface spotted with brown; terminal segment black, white at base and apex. Antenna cream, some greyish ochre scales. Thorax and tegula greyish brown, paler posteriorly, medial transverse white band. Fore wing greyish brown, cream spots concentrated basally and at posterior margin, large cream spot at end of cell, deep greyish brown markings at apex and middle of termen; fringe greyish brown flecked with white. Hind wing light greyish brown spotted with ochreous white towards apex and along costa, small brownish black mark at apex; fringe cream, scales tipped with grey. Legs whitish, tufts of hind tibia ochreous. Fore leg greyish brown above, tarsal segments banded with greyish brown. Mid tibia with two oblique greyish brown bands, only first tarsal segment banded. Hind tarsal segments banded with greyish brown. All spurs banded with dark grey below apex.

GENITALIA ♀ (Pl. 13, fig. 80; Zagulajev, 1972 : figs 17a, 17b). Eighth sternite rectangular, setose; ostium slit-like, anterior; sternite deeply recessed to either side of ostium margin. Eighth tergite with posterior medial emargination, anteriorly with a crescentic, posteriorly directed pouch. Antrum two-thirds length of eighth sternite.

REMARKS. *T. polysema* is allied to *T. philippinensis* but the light forewing markings are bolder. The ♀ genitalia of *philippinensis* have the eighth tergite

only shallowly concave, the eighth sternite shorter and deeply folded dorsal to the ostium which is set in an emargination of the resulting transverse ridge.

DISTRIBUTION. Java.

MATERIAL EXAMINED.

Holotype only.

*Tinissa philippinensis* sp. n.

(Pl. 3, fig. 20; Pl. 13, fig. 81)

[*Tinissa baliomicta* Meyrick; Diakonoff, 1967 : 280 (partim - 2 ♀ only). Misidentification.]

♂ unknown.

♀. 22-23 mm. Head yellowish white, vertex with admixture of dark brown scales. Labial palpus cream, tufts of second segment streaked with medium brown, terminal segment with broad brownish black band below apex. Antenna cream, some brown scales at base of scape and on first segment. Thorax and tegula greyish brown with transverse medial white band, white at posterior margin. Fore wing medium brown, yellowish ochre spots forming pattern of broken transverse lines, larger spots at margins and at apex of cell, deep brown markings at apex and along termen; fringe light greyish brown with some whitish streaks. Hind wing light greyish brown, paler maculae towards apex, apex with three dark brown spots at margin; fringe light greyish brown with some lighter streaks. Legs yellowish white, hind tibial tuft light greyish ochre. Fore leg greyish brown above, fourth and fifth tarsal segments banded greyish brown at articulation. Mid tibia with two oblique greyish brown bands, first tarsal segment banded. Hind tarsus with very pale brown band on each segment. All spurs banded with dark brown below apex. Outer spurs of hind tibia with elongate dark-tipped scales.

GENITALIA ♀ (Pl. 13, fig. 81). Eighth sternite tapered, setose, deeply infolded at two-thirds to form transverse ridge with deep medial emargination which anteriorly forms ostial margin. Posterior third of eighth sternite lightly sclerotized. Eighth tergite with shallow medial emargination posteriorly (depth greater in paratype), anteriorly with a crescentic posteriorly directed pouch. Antrum two-thirds length of eighth sternite.

REMARKS. The fore wing fringe of *T. philippinensis* is darker, the fore wing markings not as pale nor as bold as in *T. polysema*. The antrum is more heavily sclerotized and narrower, the eighth sternite not rectangular and not as heavily sclerotized posteriorly as in *polysema*.

DISTRIBUTION. Philippines (Luzon I.).

MATERIAL EXAMINED.

Holotype ♀, PHILIPPINES: Luzon, Mt Makiling (*Baker*) (genitalia slide no. W 05; USNM, Washington).

Paratype ♀, data as holotype (genitalia slide no. W 08; USNM, Washington).

*Tinissa rigida* Meyrick

(Pl. 4, figs 21, 22; Pl. 8, fig. 53; Pl. 13, fig. 83; Text-fig. 4)

*Tinissa rigida* Meyrick, 1910, *Trans. ent. Soc. Lond.* 1910 : 477. Holotype ♂, INDONESIA: Kai [Kei] Is., 1895 (*K.*) (genitalia slide no. 19782; BMNH) [examined].

*Tinissa heterograpta* Meyrick, 1928, *Exot. Microlepidopt.* 3 : 425. LECTOTYPE ♀, NEW BRITAIN: Talasea, iii. 1925 (*Eichhorn*) (genitalia slide no. 19780; BMNH), here designated [examined]. **Syn. n.**



*Tinissa chloroplocama* Meyrick, 1938, *Trans. R. ent. Soc. Lond.* **87** : 526. LECTOTYPE ♂, NEW GUINEA: Papua, Kokoda, 1200', v. 1933 (*Cheesman*) (genitalia slide no. 19790; BMNH), here designated [examined]. **Syn. n.**

*Tinissa rigida* Meyrick, *T. heterographa* Meyrick, *T. chloroplocama* Meyrick; Diakonoff, 1955 : 127 [key].

♂. 15–21 mm. Similarly patterned to ♀ but hind wing paler, a few darker maculae at apex. Flagellum of antenna whitish above. Brown markings on fore leg darker, brown bands on second and fourth tarsal segments, first with brown streak above, brown streak on outer surface of tibia. Very broad brown bands at one-third and two-thirds of hind tarsus.

♀. 21–25 mm. Head whitish, vertex with admixture of light brown. Labial palpus whitish, second segment brown above and on outer surface, brown extended to outer scales of tuft, terminal segment with broad brown ring at two-thirds, on several specimens a basal brown spot on outer surface. Antenna brownish, scape and pecten white. Thorax and tegula dark greyish brown anteriorly, whitish in posterior half. Fore wing dark brown to blackish brown with whitish transverse markings, two conspicuous oblique light basal lines; fringe greyish brown, scales whitish basally. Hind wing greyish brown with a violet sheen; fringes lighter. Legs ochreous-whitish, hind tibial tuft light greyish-ochreous. Fore leg greyish above but second and tip of first tarsal segment whitish. Mid tibia with two broad brown oblique bands on outer surface; brown dots above in middle of first and on fourth tarsal segment. Hind tarsus greyish brown above. All spurs with broad brownish streak below apex.

GENITALIA ♂ (Pl. 8, fig. 53). Corema present in eighth segment. Saccus rectangular. Uncus tapered, tips heavily sclerotized. Juxta large, heavily sclerotized, with broad, treble emarginate pair of flange-like inwardly directed processes. Dorsal surface of juxta giving rise to pair of enormous horn-like processes. Valve reduced, small and stout, with dorsal digitate setose process at one-half; rectangular process from membrane between valve and juxta with broad band of inwardly directed spines at tip. Labides a pair of rectangular plates against dorsal surface of anellus and curved ventrad. Aedeagus short; short, blunt process just below apex.

GENITALIA ♀ (Pl. 13, fig. 83; Text-fig. 4). Eighth sternite long, sharply tapered to form conical double-tipped projection which carries oblique ostium. Antrum broad, short, divided by membranous ring at point of junction with ductus seminalis, short anterior portion displaced to left. Eighth tergite with shallow V-shaped posterior medial emargination, folded longitudinally to form pair of internal lobes which slightly overlap eighth sternite.

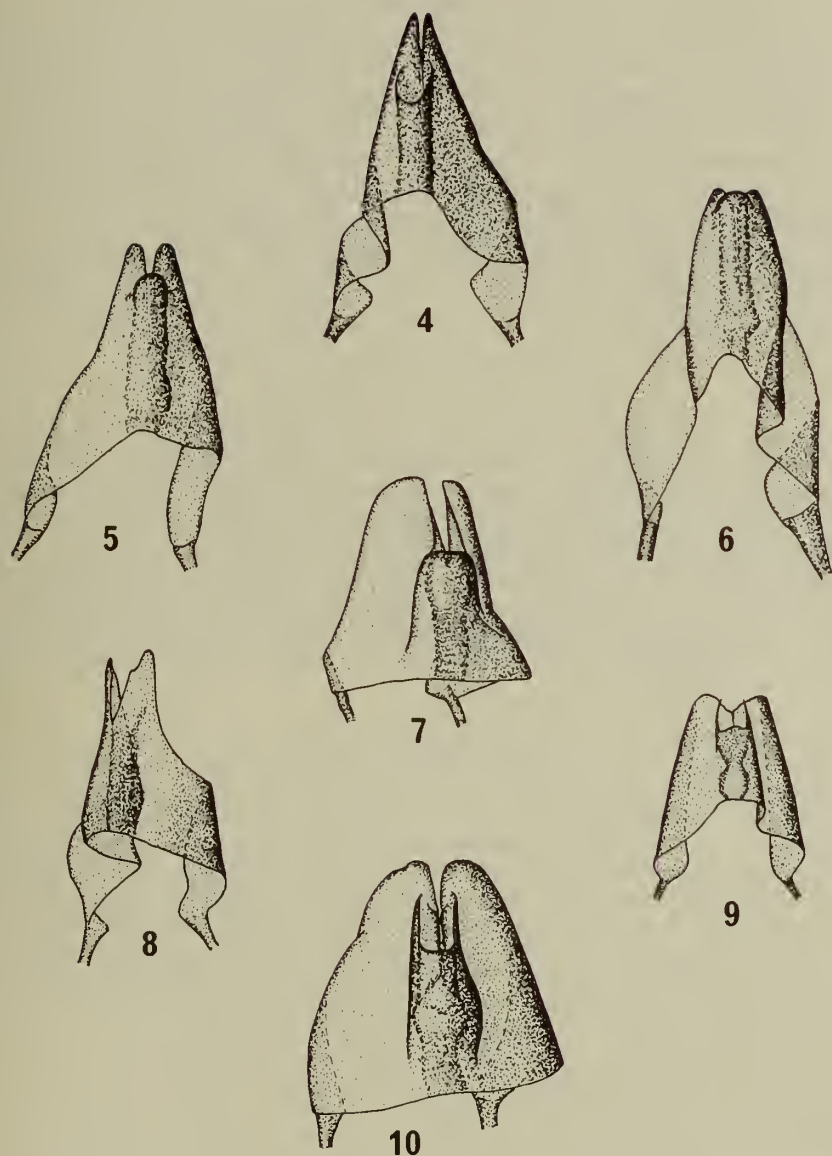
REMARKS. The anterior portion of the antrum of *T. rigida* is larger than in *T. baliomicta* in which the plane of the ostium is at right angles to the plane of the abdomen, not oblique as in *rigida*. The lateral folds of the eighth tergite are not well-developed in *baliomicta*. Males of *baliomicta* from New Guinea have the dorsal process from the membrane between valve and juxta broad and thickly spined, not rectangular and only spined at the tip as in *rigida*. *T. parallela* is allied to *rigida* but the ♀ eighth tergite has an anterior pouch and the antrum is smaller. The ♂ of *parallela* lacks the horn-like processes from the juxta present in *rigida* and *baliomicta*.

DISTRIBUTION. Indonesia (Kai Is.), New Guinea, Karkar I., New Britain, New Hanover, St Matthias I., D'Entrecasteaux Is, Louisiade Archipelago, Australia (Queensland).

#### MATERIAL EXAMINED.

NEW GUINEA: 2 ♀, Kumusi R., low elev., v–ix. 1907 (*Meek*) (genitalia slide no. 19777); 2 ♀, 1 ♂, Aroa R. (*Meek*) (genitalia slide no. 19716); 2 ♂, Hydrographer





FIGS 4-10. Female genitalia (eighth sternite) of *Tinissa* spp. 4. *T. rigida* Meyrick [lectotype of *heterograptus*], New Britain. 5. *T. baliomicta* Meyrick, holotype, Philippines. 6. *T. baliomicta* Meyrick, New Guinea. 7. *T. parallela* sp. n., holotype, Sumatra. 8. *T. dohertyi* sp. n., holotype, Ambon I. 9. *T. kidukaroka* sp. n., holotype, Borneo. 10. *T. insignis* Zagulajev, holotype, Java.

Mts, 2500', ii. 1918 (*Eichhorn Bros.*) (genitalia slide no. 19715); 1 ♂, Astrolabe Bay, 1800', 1926 (*Dodd*); 2 ♂, 2 ♀, Milne Bay (*Meek*) (genitalia slide no. 19713); 1 ♀, Lae, 20.ii.1968 (*Coode*). KARKAR I.: 3 ♀, 1 ♂, ii. 1914 (*Meek*) (genitalia slide nos. 19712, 19714). NEW BRITAIN: 1 ♀, Talasea, i. 1925 (*Eichhorn*) [paralectotype of *heterograptus*] (abdomen missing). NEW HANOVER: 1 ♀, ii. 1923 (*Meek*) (genitalia slide no. 19742). ST MATTHIAS I.: 1 ♂, vii. 1923 (*Eichhorn*) (genitalia slide no. 19717). D'ENTRECASTEAUX IS.: 3 ♂, 1 ♀, Fergusson I., 1-9. x., 7-20. xi., 21. xi.-18. xii., 23-31.xii.1894 (*Meek*) (genitalia slide no. 19781). LOUISIAD ARCHIPELAGO: 1 ♂, St Aignan I., 1897 (*Meek*) (genitalia slide no. 19710).

AUSTRALIA: 1 ♂, 2 ♀, N. Queensland, Kuranda, 11. x., 12. x., 20.xii.1904 (*Dodd*) (genitalia slide nos. 19772, 19773).

All specimens in BMNH.

### *Tinissa baliomicta* Meyrick

(Pl. 4, fig. 23; Pl. 13, figs 82, 84; Text-figs 5, 6)

*Tinissa baliomicta* Meyrick, 1928, *Exot. Microlepidopt.* 3 : 424. Holotype ♀, PHILIPPINES:

Luzon, Mt Makiling, 1927 (*Baker*) (genitalia slide no. 19789; BMNH) [examined].

*Tinissa baliomicta* Meyrick; Diakonoff, 1967 : 279 (partim - 8 ♀ only).

♂ [New Guinea only]. 21-23 mm. Similarly patterned to ♀ but fore wing with pale markings broader; dark, diffuse but conspicuous brown spot beyond whitish mark at end of cell. Hind wing paler than in ♀, very light greyish brown in one example, whitish in other. Fore tarsus brown above only on distal half of first and on fourth segment. Distinct black dot in upper surface of tuft at tip of hind tibia.

♀. 22-32 mm. Head whitish, brown scales near eyes and posteriorly. Labial palpus whitish, second segment brown above and on external face, tuft mixed with brown externally; base of terminal segment with few brown scales above, brown band at two-thirds. Antenna brownish, first segment very dark, scape white. Thorax and tegula whitish, brown anteriorly. Fore wing medium to dark brown with ochreous-whitish transverse striae, white concentrated at end of cell and in conspicuous oblique basal line, darker brown dot at base of costa and several small dark dots at apex; fringe greyish brown, paler basally, whitish dots continued into fringe. Hind wing greyish brown, paler maculae at apex; fringe mixed greyish and light ochreous. Legs ochreous-whitish, hind tibial tuft light greyish brown. Fore tibia and first and fourth tarsal segments brown above. Mid tibia with two broad oblique brownish bands on outer face, first and fourth tarsal segments with brown spot above. Upper surface of hind tarsus predominantly blackish brown, whitish only on base of first and tips of second and third segments. All spurs with large greyish brown streak below apex.

GENITALIA ♂ [New Guinea only]. Similar to genitalia of *T. rigida* but deep V-shaped medial emargination in ventral edge of juxta. Dorsal process from membrane between valve and juxta adjacent to dorsal pair of labides broad, semi-ovate and thickly clothed with fine spines on inner surface.

GENITALIA ♀ (Pl. 13, fig. 84; Text-fig. 5 [Philippines]; Pl. 13, fig. 82; Text-fig. 6 [New Guinea]). Eighth sternite triangular, deep, narrow medial emargination posteriorly. Ostium protuberant, at right angles to plane of eighth sternite. Antrum short, broad, sharply tapered anterior to membranous zone at point of junction with ductus seminalis. Eighth tergite with V-shaped medial emargination posteriorly.

REMARKS. *T. baliomicta* is closely allied to *T. rigida* but in the ♀ genitalia the ostium is at right angles to the plane of the eighth sternite, not oblique: the ♂ has a broader and larger dorsal process between the valve and the juxta than does

*rigida*, spines not restricted to the margins of the process; males of *rigida* lack the deep V-shaped medial emargination present in the ventral margin of the juxta of *baliomicta*. Females of *baliomicta* from New Guinea differ slightly from topotypical females in the more terminal position of the ostium and the medially more bulbous eighth sternite. In the three New Guinean preparations the eighth tergite has internal longitudinal folds forming lateral lobes similar to those of *rigida*. In specimens from Biagi these are much reduced but in a specimen from the Cyclops Mts are well developed. In New Guinea *baliomicta* and *rigida* appear to be geographically separated, *rigida* only being recorded from below 750 m and *baliomicta* only from above 1050 m. The series of *baliomicta* described from the Philippines by Diakonoff (1967: 279) contains four species, *T. philippinensis*, *T. errantia* and *T. bakeri* and only eight females referable to *baliomicta*.

DISTRIBUTION. Philippines (Luzon I.); New Guinea.

#### MATERIAL EXAMINED.

PHILIPPINES: 9 ♀, Luzon, Mt Makiling (*Baker*) (genitalia slide nos. W 04, 5266 [Diakonoff]; USNM, Washington, one specimen in RNH, Leiden); 1 ♀, Luzon, Benguet, Palali, 2000', 20.xii.1912 (*Wileman*) (genitalia slide no. 19734; BMNH).

NEW GUINEA: 5 ♀, 1 ♂, Mambare R., Biagi, 5000', i-iv. 1906 (*Meek*) (genitalia slide nos. 19728, 19751, 19776; BMNH); 1 ♀, Cyclops Mts, Mt Lina, 3500-4500', iii. 1936 (*Cheesman*) (genitalia slide no. 19793; BMNH); 1 ♂, Buntibasa dist., Kratke Mts, 4000-5000', vi. 1932 (*Mayer*) (genitalia slide no. 19775; BMNH).

#### *Tinissa parallela* sp. n.

(Pl. 4, figs 24, 25; Pl. 9, fig. 54; Pl. 14, fig. 85; Text-fig. 7)

♂. 19-20 mm. Similarly patterned to ♀ but paler; vestiture of head wholly yellowish white but brown external streaks on tuft of labial palpus, two external brown marks on terminal segment; few brown scales anterior to eye. Thorax and tegula white, tegula brown anteriorly. Fore wing pale markings heavier than in ♀; hind wing whitish, light brown on veins and at margin. Legs whitish, hind tibial tuft greyish brown distally. Fore leg dark brown above, tarsus banded with dark brown on first and fourth segments. Mid tibia with two oblique light brown streaks, mid tarsus with two brown dots on upper surface. Hind tarsal segments each with blackish brown spot on upper surface. All spurs with blackish brown subapical band.

♀. 22-23 mm. Frons yellowish white, vertex light brown. Labial palpus whitish, second segment brown above, tuft streaked with dark brown, terminal segment with two dark brown dots on outer surface. Antenna dull brown, lighter beneath, scape white. Thorax whitish, some light brown scales anteriorly, tegula light brown flecked with white. Fore wing dull brown with cream maculae, pronounced oblique double basal line, maculae concentrated in medial fascia and beyond cell, conspicuous dark mark beyond three-quarters; fringe whitish streaked with light brown. Hind wing light greyish brown, paler maculae towards apex; fringe whitish. Legs badly damaged.

GENITALIA ♂ (Pl. 9, fig. 54). Corema present in eighth segment. Saccus triangular, truncate anteriorly. Uncus tips blunt, heavily sclerotized, finely ridged at apex. Juxta very large, angular, without processes. Valve reduced, comparatively lightly sclerotized, with pair of dorsal processes with apices bearing long hairs. Pair of triangular labides dorsal to anellus.

Aedeagus curved, tapering, triangular process at two-thirds, two small thorn-like processes at tip.

GENITALIA ♀ (Pl. 14, fig. 85; Text-fig. 7). Eighth sternite tapered, truncate, a deep, narrow medial emargination to one-half; either side of emargination ventral ridges rising to meet ostial margin. Ostium transverse, protuberant. Eighth tergite medially emarginate posteriorly, margin invaginated anteriorly to form pouch. Antrum very short, less than half length of medial emargination of eighth sternite.

REMARKS. *T. parallela* differs from both *T. rigida* and *T. baliomicta* in lacking horn-like processes from the juxta in the ♂ and possessing a pouch in the eighth tergite in the ♀. It differs from *T. indica* in lacking spined processes from the subscaphium in the ♂ and not having the antrum displaced anteriorly to the left in the ♀.

DISTRIBUTION. Singapore, Sumatra.

#### MATERIAL EXAMINED.

Holotype ♀, SUMATRA: Padang Bovenlanden, Batang Proepoe, 1500' (genitalia slide no. 19792; BMNH).

Paratypes. SUMATRA: 1 ♀, Dempo, 4000', viii. 1923 (*Brooks*) (genitalia slide no. 19736; BMNH); 1 ♂, Bonam Dolok, Sibolga, 500 m, 3.xi.1931 (*Mohr*) (genitalia slide no. L 04; RNH, Leiden). SINGAPORE: 1 ♂ (*Baker*) (genitalia slide no. W 06; USNM; Washington).

### *Tinissa indica* sp. n.

(Pl. 4, fig. 26; Pl. 9, fig. 55; Pl. 14, fig. 86)

♂. 25-30 mm. Similarly patterned to ♀.

♀. 26-30 mm. Head whitish, few brown scales near eyes. Labial palpus whitish, second segment and tuft dark brown above and on outer surface, terminal segment with broad brown band at a little beyond one-half, brown spot at base. Antenna brown, scape and pecten whitish. Thorax and tegula predominantly brown, thorax white for posterior two-thirds, tegula white for posterior third with anterior white dot. Fore wing purplish brown with conspicuous white dots along costa, in posterior third, at base and at end of cell, finely speckled with lighter brown; fringe brownish. Hind wing light greyish brown with a violet sheen, lighter speckles concentrated at apex; fringe lighter. Legs ochreous cream, hind tibial tuft light greyish brown. Fore tibia and tarsus blackish brown above, cream at articulations and on fifth tarsal segment. Mid tibia with two broad oblique brown bands on outer face, all tarsal segments except fifth with large blackish brown spot above, hind tarsi similar. All spurs with large blackish brown spot below apex.

GENITALIA ♂ (Pl. 9, fig. 55). Corema present in eighth segment. Saccus triangular. Uncus broad; tips truncate, heavily sclerotized and setose. Subscaphium broad, invaginated to form pair of digitate processes with spined tips. Juxta large, forming pair of fist-shaped processes. Valve short, conical; elongate process from membrane between valve and juxta. Transtilla present, broad; pair of finely scobinate labides dorsal to anellus. Aedeagus with long carina from two-thirds.

GENITALIA ♀ (Pl. 14, fig. 86). Eighth sternite ventrally protuberant, tapered, with shallow medial emargination in ventral margin of ostium. Antrum broad, ductus bursae entering on left. Posterior region of ductus bursae with very fine regular constrictions, ductus broadening and constrictions coarser anteriorly. Eighth tergite truncate, slightly concave posteriorly.



REMARKS. *T. indica* is allied to *T. transversella* but the ♀ lacks a deep posterior emargination of the eighth sternite or tergite; the wing pattern is much darker. *T. indica* is also allied to *T. bakeri* but the male has a truncate, not pointed uncus; the juxta is not reduced to a pair of cygnate lobes.

DISTRIBUTION. India (Assam), Sikkim, Bhutan, Taiwan (Formosa).

#### MATERIAL EXAMINED.

Holotype ♀, SIKKIM: 1800', v. 1897 (*Dudgeon*) (genitalia slide no. 19766; BMNH).

Paratypes. INDIA: 3 ♀, 4 ♂, Assam, Khasi Hills, various dates 1894–1906 (*Doherty*) (genitalia slide nos. 19756, 19767, 19768); 2 ♂, Assam, Margherita, 1888, 1889 (*Doherty*) (genitalia slide no. 19759); 1 ♂, Assam, Khasi Hills, Cherra Punji, 1894 (*Doncaster*); 1 ♀, Assam, Silchar, Cachar, 12.viii.'7; 1 ♀, Assam, Jorhat dist., Tocklai, 6–12.xi.1919 (*Fletcher*). SIKKIM & BHUTAN: 1 ♂ (*Knyvett*). BHUTAN: 1 ♂, 28. vii. (*Dudgeon*) (genitalia slide no. 19756). All paratypes in BMNH.

Material excluded from paratype series. TAIWAN (Formosa): 2 ♂, Kanshirei, 1000', 20. iv., 27.vii.1908 (*Wileman*) (genitalia slide no. 19763; BMNH).

#### *Tinissa transversella* (Walker) comb. n.

(Pl. 4, fig. 27; Pl. 14, fig. 89)

*Gelechia transversella* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* 29 : 641.

Holotype ♀, SARAWAK: Saunders colln (badly damaged – abdomen missing; BMNH) [examined].

♂. unknown.

♀. 22–32 mm. [Description based on specimen from Sulawesi.] Head whitish mixed with brown. Labial palpus whitish, first and second segment blackish brown above and on outer surface of tuft, terminal segment with dark brown band at two-thirds. Antenna brownish, basal two segments of flagellum darker above, scape whitish. Thorax and tegula [damaged] whitish, dark brown anteriorly. Fore wing dull brown traversed by ochreous whitish striae; fringe greyish brown mixed with white, bases of scales pale. Hind wing light greyish with paler maculae at apex; fringe greyish brown, bases of scales whitish. Mid and hind legs missing: fore tibia and tarsus blackish brown above, whitish on second and fifth tarsal segments.

GENITALIA ♀ (Pl. 14, fig. 89) [Specimen from Sulawesi]. Eighth sternite triangular with deep, narrow, medial emargination to one-half in dorsal and ventral surfaces of posterior projection; ostium very narrow. Antrum broad posteriorly, sharply narrowed anterior to membranous zone at point of junction with ductus seminalis; anterior portion of antrum narrow, sclerotization extended into first nine or ten regular constrictions of ductus bursae. Eighth tergite with shallow posterior medial emargination, longitudinally folded to form two internal lateral flaps either side of ovipositor as in *T. rigida*.

REMARKS. The holotype of *transversella* is so damaged as to defy positive characterization of this taxon of which I take the female from Sulawesi described above as representative. The latter specimen is similar to the remnants of the type and is not incompatible with the original description. The Sumatran specimen differs slightly from the Sulawesi female in the lighter markings of the labial palpus and shorter anterior portion of the antrum: additionally it lacks the internal flaps from the eighth tergite but this feature is also variable in *T. baliomicta*. *T. transversella*

differs from *T. indica* in having a much more extensive series of light markings on the fore wing and having a medially emarginate eighth tergite; the regular constrictions of the ductus bursae are coarser than in *indica*.

DISTRIBUTION. Sumatra, Borneo (Sarawak), Sulawesi.

#### MATERIAL EXAMINED.

SULAWESI (S.W. Celebes): 1 ♀, Goa Malino, 3600', vi. 1938 (*Kalis*) (genitalia slide no. 19732; BMNH).

SUMATRA: 1 ♀, W. Sumatra, Lebong Tandai, 1920-23 (*Brooks*) (genitalia slide no. 19733; BMNH).

### *Tinissa dohertyi* sp. n.

(Pl. 4, fig. 28; Pl. 14, fig. 88; Text-fig. 8)

♂ unknown.

♀. 20 mm. Head rubbed bare; labial palpus whitish, second segment brownish above and on outer face, terminal segment damaged. Antenna broken but scape dull whitish. Thorax and tegula whitish posteriorly, brown anteriorly. Fore wing medium brown with creamy white transverse striae. Hind wing brownish grey, darker spots at apex; fringe of anal angle light brown with greyish tint. Legs whitish, damaged or missing, but one fore leg intact though rubbed; first and fourth tarsal segments banded with brown. Hind leg with greyish-ochreous tibial tuft, tip of tuft dark grey; tarsus brown above; spurs with dark brown streak below apex.

GENITALIA ♀ (Pl. 14, fig. 88; Text-fig. 8). Eighth sternite produced posteriorly, with deep ventral keel and posterior medial emargination to nearly one-half. Ostium deeply sunk within posterior lobes of eighth sternite. Antrum slightly tapering from ostium, bulbous at point of junction with ductus seminalis; anterior portion narrow, expanded slightly at tip. Eighth tergite with posterior medial emargination and internal longitudinal folds forming lightly sclerotized lobes either side of ovipositor.

REMARKS. *T. dohertyi* is closely allied to *T. transversella* but the posterior tips of the eighth sternite are more elongate; the eighth tergite has a deeper posterior medial emargination; the antrum is narrower, sclerotization not continued into the regular constrictions of the ductus bursae; the keel of the eighth sternite is not as deep in *transversella* as in *dohertyi*.

DISTRIBUTION. Moluccas (Ambon I.).

#### MATERIAL EXAMINED.

Holotype ♀, AMBON I. (Amboyna): 1892 (*Doherty*) (genitalia slide no. 19740; BMNH).

### *Tinissa bakeri* sp. n.

(Pl. 9, fig. 56)

[*Tinissa baliomicta* Meyrick; Diakonoff, 1967 : 279 (partim - 1 ♂ only). Misidentification.]

♂. Head whitish, mixed with brown on vertex. Labial palpus whitish, brown above, tuft of second segment mixed with grey. Antenna white, ochreous below, a few brown scales

above on scape and first two segments. Thorax and tegula dull brown with broad transverse whitish medial band. Fore wings missing. Hind wing whitish, grey-brown on veins, fringe whitish. Legs [glued to polyporus] whitish; fore tibia blackish brown above, first and fourth tarsal segments banded with blackish brown. Mid tibia with two broad oblique light greyish brown bands, first mid tarsal segment banded with light greyish brown. Hind tibial tuft distally light greyish brown, first tarsal segment with light greyish brown transverse band; three distal segments of hind tarsus missing. Spurs with greyish brown streak below apex.

♀ unknown.

GENITALIA ♂ (Pl. 9, fig. 56). Corema present in eighth segment. Saccus short, very broad. Uncus lobes tapered, tips sharp, slightly curved. Subscaphium narrow posteriorly, broadened anteriorly and invaginated ventrad to form pair of heavily sclerotized, finely spined digitate processes. Juxta reduced, with deep medial emargination to form V-shaped process, tips of juxta arms broadened with inwardly directed spine. Valves divided into two lobes by deep medial notch: outer, ventral lobe rounded at tip; inner, dorsal lobe more elongate, tip produced into ventrally directed spine. Pair of lobate labides dorsal to anellus. Aedeagus stout, tapering apically, curved.

REMARKS. *T. bakeri* is closely allied to *T. indica*, the only other known species with a similarly modified subscaphium, but in *indica* the juxta is very stout, forming a pair of club-like processes curved over the valves. The process from the membrane between valve and juxta present in *indica* may be homologous with the dorsal lobe of the valve of *bakeri*: in the latter species there is a ventral membranous zone between the dorsal lobe of the valve and the remainder of the valve but on the ventral and inner face sclerotization is continuous.

DISTRIBUTION. Philippines (Luzon I.).

MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Luzon I., Mt Makiling (*Baker*) (genitalia slide no. L 01; RNH, Leiden).

### *Tinissa insularia* sp. n.

(Pl. 5, figs 29, 30; Pl. 9, fig. 57; Pl. 14, fig. 87)

[*Tinissa chloroplocama* Meyrick, 1938, *Trans. R. ent. Soc. Lond.* **87** : 526 (partim - 1 ♀ only). Misidentification.]

[*Tinissa torvella* Walker; Diakonoff, 1948, *Treubia* **19** : 218. Misidentification.]

[*Tinissa torvella* Walker; Diakonoff, 1967 : 279, figs 428-432, 775. Misidentification.]

♂. 17-21 mm. Similarly patterned to ♀ but ground colour of legs much lighter so that dark markings are accentuated.

♀. 19-30 mm. Head cream, few brown scales near eyes. Labial palpus whitish, second segment brown on outer face and on tuft; terminal segment with blackish brown band at one-half. Antenna brownish, first two segments with darker scales above, scape whitish. Thorax and tegula dull brownish, lighter posteriorly. Fore wing dull brown with irregular, small, paler spots forming indistinct transverse striae, spots larger, whitish, at end of cell, on costa and at termen and forming a large, distinct spot on posterior margin at one-half; fringe greyish. Hind wing greyish-ochreous, apex with few darker dots; fringe whitish, scales greyish ochre from a little beyond bases to one-half. Legs light ochreous with greyish tint, hind tibial tuft greyish brown at apex. Fore tibia and tarsus dull grey above, few whitish scales at articulations. Mid tibia with two broad, ill-defined, greyish oblique bands on outer face, tarsal segments each with greyish spot above. First hind tarsal segment banded with greyish brown, second



to fifth segments with greyish brown spot above. All spurs with greyish brown streak below apex.

GENITALIA ♂ (Pl. 9, fig. 57). Corema present in eighth segment, elongate, extending to anterior edge of seventh segment. Posterior margin of eighth segment more heavily sclerotized than usual in this genus, rounded, with closely packed scale-insertions. Saccus triangular, short. Uncus elongate, clubbed at tips, with transverse ridges across tips; elongate setae on dorsal surface. Juxta broad, enlarged, projecting dorsad posterior to valves which are reduced except for short, blunt dorsal process. Process from membrane between valve and juxta flattened, ovate. Labides fused to form conical projection dorsal to anellus; sclerotization extended short way anteriorly across membrane between valves, ventrally to form square, sclerotized plate on basal wall of anellus. Aedeagus short, narrow, with very small, short carina below tip.

GENITALIA ♀ (Pl. 14, fig. 87). Eighth sternite projecting posteriorly with small V-shaped medial emargination forming ventral lip of terminal ostium. Antrum very short, tapering anteriorly; junction with ductus seminalis at one-half, point of junction sclerotized. Ductus bursae tapering posteriorly, regular constrictions very fine. Eighth tergite with broad, moderately deep U-shaped medial emargination.

REMARKS. *T. insularia* is a distinctive species; the fore wing markings are diagnostic, the white marks at the end of the cell smaller and less conspicuous than in *T. goliath* but the pale marks at one-half of the posterior margin of the fore wing are larger. The ♂ genitalia are close to those of *T. parallela* but the uncus is more elongate, more pronouncedly clubbed, the aedeagus not as elongate, the carina situated near the apex, not at two-thirds. The ♀ paralectotype of *T. chloroplocama* (below) has deformed genitalia with gynandromorph characteristics, the seventh tergite and sternite much deeper than is normal in females of this genus.

DISTRIBUTION. Malaya, Borneo, Sumatra, Java, Celebes (Kabia I.), Moluccas (Halmahera, Ambon, Buru), Philippines (Luzon, Mindanao, Palawan), New Guinea (Papua, Karkar I.), Solomon Is (Rendova I., Rennell I.).

#### MATERIAL EXAMINED.

Holotype ♀, JAVA: 192- (*Kalshoven*) (genitalia slide no. 19743; BMNH).

Paratypes. MALAYA: 1 ♀, Perak, Padang Rengas - low country, 1891 (*Doherty*) (BMNH); 1 ♂, Penang, Waterfall v., 14.iii.-18.iv.1898 (*Curtis*) (genitalia slide no. 19774; BMNH). BORNEO: 1 ♀, Sarawak, 1961-2 (*Wallace*) (BMNH); 1 ♀, Sarawak, 1908 (*W.B.*) (genitalia slide no. 19747; BMNH); 1 ♀, Dutch West Borneo, 85 miles above Pontianak, Sanggan, iv. 1909 (*Simons & Meligan*) (BMNH). JAVA: 2 ♀, 192- (*Kalshoven*) (BMNH). CELEBES: 1 ♂, Kabia I. [Seleyer], Somarisi, 1660', xii. 1938 (*Kalis*) (genitalia slide no. 19739; BMNH). MOLUCCAS: 2 ♀, Halmahera, 1892 (*Doherty*) (genitalia slide nos. 19738, 19746; BMNH); 1 ♀, Ambon I., 1892 (*Doherty*) (genitalia slide no. 19323; BMNH); 1 ♀, Buru, Station 9, 30.vi.1921 (*Toxopeus*) (genitalia slide no. L 02; RNH, Leiden). PHILIPPINES: 3 ♀, 12 ♂, Luzon I., Mt Makiling (*Baker*) (genitalia slide nos. W 01, W 03, 5264, 5274; USNM, Washington [but 1 ♀ in RNH, Leiden and 1 ♂ in BMNH]); 1 ♀, Palawan I., Puerto Princesa, x. 1925 (genitalia slide no. 5263; USNM, Washington); 1 ♀, Mindanao I., Mt Apo School, 15 km SW. of Davao, 500 m, 22-31.x.1965 (*Davis*) (USNM, Washington). NEW GUINEA: 1 ♀, Papua, Mafulu, 4000' (*Cheesman*) (genitalia slide no. 19788; BMNH) (paralectotype of *chloroplocama* Meyrick); 1 ♂, Karkar I., ii. 1914 (*Meek*)



(BMNH). SOLOMON IS.: 1 ♂, Rendova I. (*Meek*) (genitalia slide no. 19771; BMNH); 1 ♀, Rennell I., Hutuna, 1-5.xi.1953 (*Bradley*) (genitalia slide no. 19729; BMNH). SUMATRA (North): 3 ♂, 2 ♀, Dolok Merangier, 180 m, various dates 1969, 1970 (*Diehl*) (MAK, Bonn); 1 ♀, Ketambe, 40 km NW. of Kutatjane, 300-500 m, 10-18.vi.1972 (*Roesler & Küppers*) (MAK, Bonn).

***Tinissa goliath* sp. n.**

(Pl. 5, fig. 31; Pl. 15, fig. 90)

♂ unknown.

♀. 25 mm. Head white. Labial palpus whitish, brown on outer surface of second segment and tuft; terminal segment with brown dot on outer surface a little beyond one-half, few brown scales at base. Antenna brownish; scape and base of first segment white. Thorax and tegula light brown, tegula dark brown anteriorly. Fore wing greyish brown with a purplish sheen, marked with white spots, these concentrated at costa, posterior margin and end of cell and interspersed with smaller light greyish brown spots; fringe greyish brown. Hind wing light brownish grey, darker with scattered lighter maculae at apex; fringe light brownish grey, scales whitish at base. Legs whitish, hind tibial tuft greyish posteriorly. Fore leg heavily marked with dull brownish grey above, few whitish scales at articulations; mid leg similar, tibia with two grey oblique bands on outer face. Hind tarsus with two large dark greyish brown spots on first segment above, smaller spots on second, third and fourth segments. All spurs with greyish brown streak below apex.

GENITALIA ♀ (Pl. 15, fig. 90). Eighth sternite produced posteriorly with small but distinct posterior keel. Ostium terminal, very small; ventral margin with V-shaped indentation; dorsal margin deeply emarginate. Antrum extremely small, posteriorly bulbous, short. Ductus bursae broadened anteriorly, regular constrictions very fine and close-set. Eighth tergite protruding posteriorly; very small indistinct medial indentation in posterior margin.

REMARKS. The white fore wing markings of *T. goliath* are larger and more pronounced, especially the markings at the end of the cell, than in *T. insularia* in which the whitish mark at one-half of the posterior margin is much more pronounced. The ostium and antrum of *goliath* are much narrower than in *insularia*; the posterior margin of the eighth sternite is broader. The eighth tergite of *goliath* lacks the deep U-shaped posterior emargination present in *insularia*.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: [central W. Irian] Mt Goliath, 5-7000' (*Meek*) (genitalia slide no. 19754; BMNH).

***Tinissa kidukaroka* sp. n.**

(Pl. 5, fig. 32; Pl. 15, fig. 91; Text-fig. 9)

♂ unknown.

♀. 21 mm. Head white, few brown scales near eyes. Labial palpus whitish, blackish brown above and on external face, second segment and tuft; third segment missing. Antenna broken; scape white, first flagellar segment blackish brown above. Thorax whitish, tegula brown shading to cream posteriorly. Fore wing blackish brown patterned with white spots,

spots particularly large at margins and coalesced at end of cell, basal two-thirds of wing badly rubbed; fringe greyish brown, scales paler basally, apical and tornal white spots continued into fringe. Hind wing pale brownish grey, darker at distal margin, with a few pale apical spots; fringe greyish, scales paler basally. Legs whitish, hind tibial tuft light brownish grey. Fore leg damaged. Mid femur-tibia joint black above, tibia with two oblique greyish brown bands on outer face; first tarsal segment with blackish medial band, third and fourth segments with blackish spot above. Hind tarsus similarly marked to mid tarsus. All spurs with blackish brown streak below apex.

GENITALIA ♀ (Pl. 15, fig. 91; Text-fig. 9). Eighth sternite with well developed ventral keel accommodating ostium and antrum; ventral lip of ostium squarely emarginate to nearly one-half length of posterior sclerotized portion of antrum; dorsal margin of eighth sternite with shallow, V-shaped medial emargination. Antrum 8-shaped, anterior bulbous region membranous at point of junction with ductus seminalis; anteriorly a sclerotized ring posterior to point of junction with ductus bursae. Regular constrictions of ductus bursae very fine. Eighth tergite with broad U-shaped posterior medial emargination.

REMARKS. *T. kidukaroka* is closely allied to *T. goliath* but the white tornal markings of the fore wing are much heavier. The ostium is broader, its ventral lip much more deeply emarginate than in *goliath*; the antrum is longer and the eighth tergite has a deep medial emargination not present in *goliath*.

DISTRIBUTION. Borneo.

#### MATERIAL EXAMINED.

Holotype ♀, BORNEO: N. Borneo, Kidukarok, 25.viii.1956 (*Cambridge University Expedition*) (genitalia slide no. 19744; BMNH).

### *Tinissa insignis* Zagulajev

(Pl. 5, fig. 33; Pl. 15, fig. 92; Text-fig. 10)

*Tinissa insignis* Zagulajev, 1972, *Trudy zool. Inst. Leningr.* **52** : 350, figs 18a, 18b. Holotype ♀, JAVA: Nongkodjadjar, 6.viii.1934 (genitalia slide no. 23; RNH, Leiden) [examined].

♂ unknown.

♀. 28 mm. Head whitish, vertex light brown. Labial palpus whitish, tuft of second segment dark, dull brown, few white scales distally; terminal segment denuded of scales. Antenna brownish, scape with few remaining ochreous cream scales. Thorax rubbed, ochreous cream, tegula dull brown, paler posteriorly. Fore wing dark purplish brown with ochreous-whitish maculae, most pattern detail obliterated; fringe mixed dull brown and brownish white. Legs brownish white. Fore leg blackish brown above, mid tibia with two blackish brown oblique stripes externally, fore and mid tarsal segments with darker bands, hind legs missing.

GENITALIA ♀ (Pl. 15, fig. 92; Text-fig. 10). Eighth sternite tapered, setose, narrow posterior emargination with ridges either side rising to meet ventral margin of ostium at nearly one-half length of sternite; ostial margin almost perpendicular to and level with ridges. Antrum shorter than ridges with lobe-like internal projection from ventral wall. Eighth tergite with very deep medial emargination posteriorly, small, bilobed, anteriorly directed pouch at one-eighth anterior margin.

REMARKS. *T. insignis* is not closely allied to any other *Tinissa* species but the ♀ genitalia resemble those of *T. parallela*. *T. insignis* is larger than *parallela*,

the pouch in the eighth tergite smaller, not at the anterior margin but at one-eighth from it. The ventral margin of the ostium is a sharp edge, not rounded as in *parallela*.

DISTRIBUTION. Java.

MATERIAL EXAMINED.

Holotype only.

*Tinissa phrictodes* Meyrick

(Pl. 5, figs 34, 35; Pl. 9, fig. 58; Pl. 15, fig. 93)

*Tinissa phrictodes* Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 477. LECTOTYPE ♀, SOLOMON Is.: Choiseul I., 1905 (*Meek*) (genitalia slide no. 19783; BMNH), here designated [examined].

♂. 16–18 mm. Similarly patterned to ♀ but antenna whitish, first and second flagellar segment with few brown scales above. Fore wing with white markings much more numerous and close-set than in ♀; dark termen conspicuous. Hind wing greyish white, veins darker, apex greyish brown; fringe paler than in ♀. Legs whiter than those of ♀ so dark markings more conspicuous, hind tarsus with dark brown spots above on first to fourth segments, dark scaling extended to form band on first segment.

♀. 21 mm. Head whitish, few brown scales near eyes. Labial palpus whitish, second segment brown above and on outer face; outer surface of tuft brown; terminal segment with brownish streak from one-half on outer face, few brown scales at base. Antenna brownish, scape and first flagellar segment white. Thorax and tegula light brown, tegula with medial transverse white band. Fore wing light creamy brown, rather darker at termen, patterned with whitish spots, spots large at costa and posterior margin, coalescing at end of cell; fringe light grey, scales paler at base. Hind wing light brownish grey, apex darker, few pale subapical spots; fringe light grey, scales paler at base. Legs ochreous-whitish, hind tibial tuft brownish grey. Fore leg dark grey above, two triangular white marks on outer face of tibia, second and fifth tarsal segments white, some whitish scales on adjoining segments. Mid tibia with two diffuse, oblique greyish bands on outer face, brownish grey bands on first, third and fourth tarsal segments. Hind tarsus with first segment brownish from one third, few brownish scales at base. All spurs with brownish streak from below apex almost to base.

GENITALIA ♂ (Pl. 9, fig. 58). Corema absent from eighth segment. Saccus elongate, triangular. Uncus lobes divergent, supported on broadened section of vinculum two-thirds as deep as saccus. Tips of uncus lobes turned inward, bearing line of dense, short spines. Subscaphium distinctly V-shaped. Juxta a narrow, heavily sclerotized ring ventral to anellus, nearly complete dorsally, forming pair of horn-like dorsal processes. Transtilla present, forming broad bar between valves dorsal to juxta processes. Valve elongate, tip heavily sclerotized, pointed, directed ventrad. Aedeagus short and stout.

GENITALIA ♀ (Pl. 15, fig. 93). Eighth sternite almost square, posterior third setose; small, shallow V-shaped posterior emargination; ostium situated at three-quarters. Ventral lip of ostium with very deep, narrow, V-shaped medial emargination. Antrum extremely short. Ductus bursae broad, only five or six ill-defined regular constrictions posteriorly. Eighth tergite with broad, shallow V-shaped medial emargination posteriorly.

REMARKS. The ♂ of *phrictodes* differs from other *Tinissa* species in the degree of dorsal broadening of the vinculum, possessing a V-shaped subscaphium and in the characteristic shape of the juxta and uncus. The ♀ may be recognized by the long and tapering bursa copulatrix and the extremely short and inconspicuous section of the ductus bursae which is regularly constricted. The position of this species is obscure; the structure of the uncus is similar to that of *T. polystacta* but *phrictodes* has a three-segmented maxillary palpus whereas the palpus of *poly-*



*stacta* is five-segmented. The ♀ specimen from New Ireland has a small sclerotized area on the wall of the bursa copulatrix. This is the only case of sclerotization of the bursa noted in this subfamily: it is considered to be a freak.

DISTRIBUTION. New Ireland, Solomon Is. (Choiseul, Rendova, Vella Lavella Is.).

#### MATERIAL EXAMINED.

SOLOMON IS.: 1 ♂, Choiseul I., 1905 (*Meek*) (genitalia slide no. 19784; BMNH) [paralectotype]; 1 ♂, Rendova I. (*Meek*) (genitalia slide no. 19720; BMNH); 1 ♀, Vella Lavella I., ii–iii. 1908 (genitalia slide no. 19722; BMNH). NEW IRELAND: 1 ♀, xii. 1923 (*Eichhorn*) (genitalia slide no. 19745; BMNH).

### *Tinissa poliophasma* Bradley

(Pl. 5, fig. 36; Pl. 16, fig. 98)

*Tinissa poliophasma* Bradley, 1965, *Ruwenzori Exped. 1952* 2 : 115, figs 56, 204, 205. Holotype ♀, UGANDA: Ruwenzori Range, Semliki Forest, 2850', 22.viii.–3.ix.1952 (*Fletcher*) (genitalia slide no. 8483 [Bradley]; BMNH) [examined].

*Tinissa poliophasma* Bradley; Gozmány & Vári, 1973 : 86, fig. 226 [redescription].

♂ unknown.

♀. 19 mm. Head white with few brown scales near eyes. Labial palpus white, first and second segments brown above, tuft mixed with brown; terminal segment with brown spot on outer face a little beyond one-half. Antenna light ochreous, scape white, scales of pecten tipped with brown, first flagellar segment brown above; cilia extremely short. Thorax and tegula white, light brown anteriorly. Fore wing light brown, darker at termen, marked with close-set lighter transverse striae, conspicuous white marks at costa, conspicuous white basal fascia, large pale spot on posterior margin at one half; fringe ochreous, greyish brown at termen. Hind wing light golden brown with a greyish tint; fringe whitish, scales tinted with light brown from little beyond base to more than one-half of their length. Legs (damaged) ochreous-whitish. Fore leg greyish-ochreous above to tip of tibia, greyish-ochreous spot on upper surface of first tarsal segment. Mid femur-tibia joint brownish, tibia with two light brown oblique bands on outer face, first and fourth tarsal segments with light brown spot above. Hind legs missing.

GENITALIA ♀ (Pl. 16, fig. 98). Eighth sternite almost square; ostium from one half to tip of sternite, in same plane as surface of abdomen; ostium lip slightly protuberant. Antrum extremely short, about half length of ostium. Ductus bursae with regular constrictions very fine, rugose, rugosity appearing as overlapping plates under high ( $\times 250$ ) magnification. Eighth tergite rounded posteriorly.

REMARKS. The wing pattern of this species differentiates it from all other known *Tinissa* species which lack the strongly defined white basal fascia of the fore wing. The extremely short antennal cilia of *poliophasma* are possibly evidence for alliance with *T. ruwenzorica* but the female of the latter species is unknown. This is the only *Tinissa* species in which the ostium is parallel with the abdomen surface; in all other known species it is at least oblique.

DISTRIBUTION. Uganda (Ruwenzori Range).

#### MATERIAL EXAMINED.

Holotype only.



*Tinissa spaniastra* Meyrick

(Pl. 6, fig. 37; Pl. 9, fig. 59; Pl. 16, fig. 94)

*Tinissa spaniastra* Meyrick, 1932, *Trans. ent. Soc. Lond.* **80** : 118. Holotype ♂, ETHIOPIA: Djem-Djem Forest, c. 8000', 9.x.1926 (Scott) (genitalia slide no. 10176 [Gozmány]; BMNH) [examined].

*Tinissa spaniastra* Meyrick; Gozmány, 1969 : 290 [description of ♀ genitalia].

*Tinissa spaniastra* Meyrick; Gozmány & Vári, 1973 : 85, figs 223, 224 [redescription].

♂. 25 mm. Similarly patterned to ♀ but legs with all tarsal segments except first (as ♀) brown to at least two-thirds except for fifth tarsal segment which is white. Antennal cilia longer than in ♀ but still only one-half diameter of shaft.

♀. 20, 27 mm. Head cream, few brown scales near eyes. Labial palpus cream, second segment and tuft brown on outer surface; terminal segment ringed with dark brown at one-half. Antenna, including scape, brownish; first flagellar segment nearly black above; cilia very short. Thorax and tegula dark brown, thorax with few white scales posteriorly. Fore wing dark brown, darker at costa and termen, boldly marked with white spots, most conspicuous spot on costa at two-thirds; fringe brown. Hind wing light brownish ochre with numerous paler maculae, ground colour darker towards apex; fringe light ochreous. Legs ochreous to white, hind tibial tuft greyish brown. Fore leg dark brown above, some white scales at articulations, fifth tarsal segment white. Mid tibia with two broad, oblique brown bands on outer face, first tarsal segment with broad brown medial ring; remaining segments missing. First hind tarsal segment with rough brown scaling above for two-thirds; second and third segments brown basally, remainder missing. All spurs with dark brown streak below apex.

GENITALIA ♂ (Pl. 9, fig. 59). Corema present in eighth segment. Saccus triangular, elongate. Uncus lobes broad, tips produced into inwardly directed spines. Juxta forming pair of broad lateral projections with sharp dorsal tips; valve reduced, conical; process from membrane between valve and juxta long, finger-like, reaching tip of juxta. Labides fused and forming large hood-like projection dorsal to valves. Aedeagus slender, tapering, with line of fine spicules running full length, scattered at base and dense at tip.

GENITALIA ♀ (Pl. 16, fig. 94). Eighth sternite long and narrow, line of fine spines at posterior margin; ostium almost as long as sternite, tapering posteriorly, angled obliquely to plane of sternite, ventral lip V-shaped. Antrum short, three-quarters length of eighth sternite, slightly tapering anteriorly, only lightly sclerotized at point of junction with ductus seminalis. Regular constrictions of ductus bursae very fine, minutely rugose. Eighth tergite rounded posteriorly with about twelve coarse spines at margin.

REMARKS. *T. spaniastra* is allied to *T. poliophasma* but the ostium, antrum and ductus bursae are broader; the ostium is not flush with the surface of the eighth sternite; the rugosity of the ductus bursae is much coarser in *poliophasma*. The ostium of *spaniastra* tapers posteriorly but is almost rectangular in *poliophasma*. The fore wing pattern of this species is sufficiently distinctive to be diagnostic, the major distinguishing feature being the large white costal spot. Gozmány's dissection of the holotype of this species is not really suitable for critical examination. The genital armature has been so badly crushed that I am loth to attempt to remount the preparation. Gozmány & Vári's (1973) description of the male genitalia of *spaniastra* should be ignored as all components within the vinculum with the exception of the aedeagus are misidentified (see 'Morphology'). The 'cornuti' of the same authors are fine spicules on the outer surface of the aedeagus.

DISTRIBUTION. Ethiopia, Tanzania.

## MATERIAL EXAMINED.

ETHIOPIA: 2 ♀, Maraco, 20. ix., 30.x.1915 (*Kovacs*) (genitalia slide no. 19795; BMNH).

*Tinissa ruwenzorica* Gozmány

(Pl. 6, fig. 38; Pl. 10; figs 60, 61)

*Tinissa ruwenzorica* Gozmány, 1966, *Acta zool. hung.* 12 : 68, fig. 18. Holotype ♂, UGANDA: Ruwenzori Range, Mahoma River, 6700', 13-16.viii.1952 (*Fletcher*) (genitalia slide no. 12013 [Gozmány - remounted Robinson]; BMNH) [examined].

*Tinissa ruwenzorica* Gozmány; Gozmány & Vári, 1973 : 85, fig. 225 [redescription].

♂. 17 mm. Head whitish, few brown scales laterally. Labial palpus whitish, first and second segment and tuft flecked with dark brown on outer face; terminal segment with dark brown spot on outer face a little beyond one half. Antenna ochreous-whitish, first flagellar segment dark brown above; scape white; cilia extremely short. Thorax and tegula white, dark brown anteriorly. Fore wing dark blackish brown heavily striated with cream mixed with light brown, striations concentrated basally and in postmedial fascia, blackish terminal line, tornus almost uniformly blackish brown; fringe greyish, whitish at termen and mixed with brown posteriorly. Hind wing whitish, few dark maculae at termen; fringe whitish. Legs whitish, hind tibial tuft greyish brown. Fore leg dark grey above. Mid femur-tibia joint grey, tibia with two dark grey oblique bands on outer face, first tarsal segment with grey spots basally and at one-half above, tarsus otherwise grey above. Hind tarsus similarly patterned, dark grey raised scales basally on upper surface of first segment. All spurs with subapical brown ring.

♀ unknown.

GENITALIA ♂ (Pl. 10, figs 60, 61). Corema present in eighth segment, coremata scales coarse, needle-like. Eighth sternite moderately sclerotized, produced posteriorly at corner to form slightly curved and tapering process. Saccus elongate, triangular. Uncus lobes short, rounded, each with digitate lateral projection. Juxta produced posteriorly, narrow, terminating in pair of clubbed, cygnate processes. Valve short, conical. Process from membrane between valve and juxta broad, flat, parallelogram-shaped, as long as valve. Labides fused, forming short projection dorsal to anellus. Aedeagus slender and tapering, small carina just below apex.

REMARKS. Although allied to *T. torvella*, possessing a similarly modified eighth sternite, *ruwenzorica* differs in having very short antennal cilia and in the modification of the juxta which is reminiscent of that of *T. bakeri*. The form of the uncus of *ruwenzorica* is distinct - as is the external appearance - from that of all other known *Tinissa* species. The original and subsequent descriptions of this species's genitalia are inaccurate, as are the illustrations.

DISTRIBUTION. Uganda (Ruwenzori Range).

## MATERIAL EXAMINED.

Holotype only.

*Tinissa torvella* Walker

(Pl. 6, fig. 39; Pl. 10, figs 62, 63; Pl. 16, figs 95, 96)

*Tinissa torvella* Walker, 1864 : 780.

♂. 16-24 mm. Similarly patterned to ♀ but elongate scales of vertex all whitish, transverse whitish band across thorax and tegula broader.

♀. 20–32 mm. Head whitish, mixed with blackish brown near eyes and on vertex. Labial palpus whitish, second segment and tuft blackish brown on outer face, terminal segment with blackish brown spot on outer surface at base, blackish brown band at two-thirds. Antenna brownish, blackish above, scape white, scales of pecten tipped with black, first two flagellar segments black above. Thorax and tegula blackish brown with medial white transverse band. Fore wing blackish brown marked with numerous small white spots, spots larger and conspicuous at margins, in an ill-defined basal line and at end of cell; fringe blackish brown, scales paler basally, marginal white spots extended into fringe. Hind wing light brownish grey, whitish maculae at apex; fringe light grey mixed with off-white, pale apical spots extended into fringe. Legs greyish white, hind tibial tuft grey. Fore femur dark grey above, tibia and first tarsal segment grey; second and fourth tarsal segments banded with blackish. Mid tibia dark brownish grey above for proximal third; two oblique dark brownish grey bands on outer face; first tarsal segment with blackish medial band, fourth segment blackish. First and fourth hind tarsal segments banded with blackish. All spurs with long blackish streak below apex.

GENITALIA ♂ (n nominate subspecies only – Pl. 10, figs 62, 63). Corema present in eighth segment. Eighth sternite produced posteriorly at corner to form conspicuous, finely spined, club-shaped projection. Saccus broad, elongate. Uncus arms narrow, tapering. Subscaphium broad anteriorly. Juxta dish-shaped, almost surrounding aedeagus, not closely appressed to valve. Process from membrane between valve and juxta elongate and conspicuous, internal surface setose. Valve tooth-shaped, reaching three-quarters length of process. Base of anellus sclerotized dorsally, possibly representing labis.

GENITALIA ♀ (Pl. 16, figs 95, 96). Eighth sternite broad anteriorly, abruptly narrowed at one-third or one-half and produced posteriorly as elongate, dome-like structure; dorsal surface of this 'dome' with or without setae, reflexed anteriorly to form shallow pouch, base of which is level with anterior tip of antrum or at one-half. Ostium terminal, small; antrum narrow posteriorly, bulbous and only thinly sclerotized at point of junction with ductus seminalis. Anterior portion of antrum one-quarter length of posterior and three times as broad. Eighth tergite with deep U-shaped posterior medial emargination.

REMARKS. The modification of the male eighth sternite differentiates this from all other known *Tinissa* species with the exception of *T. ruwenzorica* in which the uncus lobes are rounded with a small but conspicuous lateral projection. The female genitalia are characterized by the large, dome-like posterior projection. Described material is fresh; older material is faded to a dull brown. This species is represented by two subspecies, described below.

DISTRIBUTION. Sri Lanka (Ceylon), India (Mysore).

### *Tinissa torvella torvella* Walker

(Pl. 6, fig. 39; Pl. 10, figs 62, 63; Pl. 16, fig. 95)

*Tinissa torvella* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* 29 : 780. Holotype ♂, [SRI LANKA (Ceylon):] 'Assam?' [erroneous] (genitalia slide no. 10344 [Gozmány]; BMNH) [examined].

GENITALIA ♂ (Pl. 10, figs 62, 63). See description above.

GENITALIA ♀ (Pl. 16, fig. 95). Differs from *torvella mysorensis* in that the eighth sternite is narrowed at one-third rather than one-half, dorsal surface of posterior 'dome' without setae, reflexed anteriorly to form shallow pouch, base of which is level with anterior tip of antrum, not at one half of antrum as in *torvella mysorensis*. Antrum shorter and narrower than in *torvella mysorensis*.

REMARKS. The nominate subspecies of *T. torvella* is differentiated from *T. torvella mysorensis* on characteristics of the ♀ genitalia as described above; it is not separable from *torvella mysorensis* by external characteristics.

DISTRIBUTION. Sri Lanka (Ceylon).

#### MATERIAL EXAMINED.

SRI LANKA [Ceylon]: 1 ♂, Maskeliya, viii. 1905 (*de Mowbray*) (USNM, Washington); 1 ♀, Maskeliya, vi. 1905 (*de Mowbray*) (genitalia slide no. 19752; BMNH); 5 ♀, 1 ♂, Kandy, 1600', iii, iv, v, viii, 189–, 1909, 1911 (*Pole, Mackwood*) (genitalia slide nos. 19753, 19758, 19799 [wings]; BMNH); 1 ♀, Peradeniya, viii. 1905 (*Green*) (BMNH); 2 ♀, W. Matale, 400', 189– (*Mackwood*) (BMNH); 1 ♀, 3 ♂, Nawalapitiya, 2000', 189– (*Pole*) (genitalia slide no. 19757; BMNH); 1 ♂, Colombo, 1891 (*Mackwood*) (genitalia slide no. 19322; BMNH); 1 ♀, N. Chiga, 6000', v. 1902 (*Mackwood*) (BMNH); 1 ♀, Kan District, Kandy, 2100', Uddawatakele Sanc., 10–23.i.1970 (*Davis & Rowe*) (USNM, Washington); 1 ♀, Keg District, Lavant Estate, nr Yatiyantota, 80', 19.xi.1970 (*Flint*) (USNM, Washington); 1 ♂, Maskeliya, ix.1905 (*Alston*) (genitalia slide no. 19748; BMNH).

### *Tinissa torvella mysorensis* subsp. n.

(Pl. 16, fig. 96)

GENITALIA ♂ unknown.

GENITALIA ♀ (Pl. 16, fig. 96). Similar to *torvella torvella* but posterior projection of eighth sternite not as elongate, dorsally setose, not extending beyond tips of eighth tergite. Ostium situated slightly more ventrally; antrum almost three times as wide as in nominate subspecies and longer; bulbous and lightly sclerotized portion of antrum at point of junction with ductus seminalis larger than in *torvella torvella* and with three shallow lateral folds, wall deeply invaginated to form internal process partly blocking antrum immediately posterior to junction with ductus seminalis.

REMARKS. Differentiated from *T. torvella torvella* on characteristics of the ♀ genitalia as above, *T. torvella mysorensis* is not separable from the nominate subspecies on external characteristics.

The holotype has a wing-span of 27 mm.

DISTRIBUTION. India (Mysore).

#### MATERIAL EXAMINED.

Holotype ♀, INDIA: Mysore Prov., W. Ghats, Balehonnur, Netraconda, 2800–3800', in bungalow, prob. at lights (*Evetts*) (genitalia slide no. 19755; BMNH).

### *Tinissa polystacta* (Meyrick)

(Pl. 6, fig. 40; Pl. 16, fig. 97)

*Scardia polystacta* Meyrick, 1918, *Ann. Transv. Mus.* 6 : 47. Lectotype ♀, SOUTH AFRICA: Natal, New Hanover, iii. 1913 (*Hardenberg*) (genitalia slide no. 8113 [Vári]; TM, Pretoria) [not examined].



*Polymnestra perilithias* Meyrick. 1927, *Exot. Microlepidopt.* 3 : 331. Holotype ♂, SOUTH AFRICA: Transvaal, Woodbush, 11.i.1925 (Janse) (genitalia slide no. 8044 [Vári]; TM, Pretoria) [not examined] [synonymized by Gozmány & Vári, 1973 : 86].

*Polymnestra perilithias* Meyrick; Janse, 1968 : 91, pl. 50, figs 3, 4, pl. 101, figs 9–11 [redescription].

*Scardia polystacta* Meyrick; Janse, 1968 : 98, pl. 71, figs 3, 4, pl. 105, figs 5–8, pl. 118, fig. 9 [redescription; designation of lectotype].

*Tinissa polystacta* (Meyrick); Gozmány & Vári, 1973 : 86, figs 227, 228 [redescription; synonymy; new combination].

♂. 11.5 mm. Similarly patterned to ♀; antennal cilia at least double width of flagellar segments. Legs whitish, foreleg as in ♀. Mid tibia with two broad, oblique brown bands on outer face; tarsus whitish, brown medial spot above on first segment, brown spot above at tips of other segments. Hind leg damaged but tibial tuft greyish. All spurs with brownish ring below apex.

♀. 12 mm. Head whitish, few brown scales laterally. Maxillary palpus five-segmented, folded. Haustellum absent. Labial palpus whitish, flecked with brown on outer surface, terminal segment with brownish subapical band. Antenna ochreous-whitish flecked with brown, first flagellar segment dark brown above, cilia one-half width of flagellar segments. Thorax and tegula brown, white posteriorly. Fore wing blackish brown mixed with diffuse orange-brown spots, patterned with conspicuous white spots at margins; fringe dark brownish grey. Hind wing dull brownish grey; fringe dull grey. Only left fore leg remaining, dull ochreous, greyish brown above but banded with whitish at articulations, fifth tarsal segment white.

GENITALIA ♂ (Janse, 1968: pl. 50, fig. 4). Corema absent from eighth segment. Saccus rather short, triangular. Uncus lobes separated by broad membrane, slightly waisted at one-half, densely spined on internal surface towards tip. Subscaphium broad posteriorly with slight medial emargination; rod-like anteriorly. Juxta bifid, projecting posteriorly and hardly displaced dorsally, tips elongate, almost reaching tips of valves. Valve broad basally, elongate, tapering posteriorly, tip hooked slightly inward. Process from membrane between valve and juxta blade-like, reaching three-quarters length of valve. Labis very large, projecting posteriorly, cowl-shaped, reaching tips of uncus. Aedeagus curved, moderately stout, tapered to sharp point from three-quarters.

GENITALIA ♀ (Pl. 16, fig. 97). Eighth sternite short, almost square, two groups of setae at posterior margin; ostium at right angles to plane of sternite. Antrum two-thirds length of sternite, only thinly sclerotized at one-half at point of junction with ductus seminalis. Ductus bursae short, regular constrictions fine; ventral surface of ductus with finely rugose sclerotized plate anteriorly, plate 1.5 times length of antrum. Eighth tergite posteriorly rounded, irregular row of setae on posterior margin.

REMARKS. *T. polystacta* is the smallest *Tinissa* species. The ♀ differs from all other *Tinissa* species in the ventral sclerotization of the ductus bursae. Males show affinities to *T. spaniastra*, possessing a similarly cowl- or hood-shaped labis (or fused pair of labides). The ventral positioning and deep bifurcation of the juxta in *spaniastra* is similar to that in *polystacta*, but the valves of the latter species are much more elongate. The tips of the uncus in *polystacta* are not hooked as in *spaniastra*. The bursa copulatrix is asignate: the 'minute phylliform signum' of Gozmány & Vári (1973 : 87) is a foreign body, apparently a scale. *T. polystacta* is also allied to *T. cultellata*, the only other *Tinissa* species with a five-segmented maxillary palpus – see 'Remarks' for *cultellata*.

DISTRIBUTION. South Africa.

## MATERIAL EXAMINED.

SOUTH AFRICA: Natal, 1 ♀, Isputeni, 23.i.1916 (*Janse*) (genitalia slide no. 10318; BMNH) [paralectotype of *polystacta*]; 1 ♂, Umroti, iv. 1892 (*Hutchinson*) (genitalia slide no. 12294; BMNH).

*Tinissa cultellata* (Gozmány & Vári) comb. n.

(Pl. 6, figs 41, 42; Pl. 10, fig. 64)

*Leptozancla cultellata* Gozmány & Vári, 1973, *Transv. Mus. Mem.* **18** : 87, fig. 230. Holotype ♂, UGANDA: Ruwenzori Range, Mahoma River, 6700', 13-16.viii.1952 (*Fletcher*) (genitalia slide no. 12022 [Gozmány - remounted by Robinson]; BMNH) [examined].

♂. 17, 19 mm. Head yellowish cream, few brown scales near eyes. Maxillary palpus short, five-segmented, folded. Labial palpus yellowish cream, first and second segment heavily marked with blackish brown on outer surface, terminal segment with diffuse light brown flecks in basal half of outer surface. Antenna, including scape, blackish brown. Thorax yellowish cream, tegula white. Fore wing blackish brown [badly rubbed in both examples] with cream spots at costa and termen, traces of fine cream transverse striae, light dot at end of cell; fringe blackish brown, cream where marginal spots are extended. Hind wing slightly ochreous white, flecked with pale grey anteriorly and towards termen; grey spots at termen extending into whitish fringe. Legs ochreous, flecked with blackish brown, fore leg particularly heavily marked above, hind leg hardly marked. Hind tibial tuft ochreous-whitish, scales sparse [rubbed?]. All spurs with greyish brown streak below apex.

♀. [Wings detached; not in condition suitable for description.]

GENITALIA ♂ (Pl. 10, fig. 64). Corema present in eighth segment. Saccus broad, almost square. Lobes of uncus quite widely separated, fully fused with vinculum, tapered, sharply pointed and heavily sclerotized; small circular basal process, long spine-like lateral process parallel to uncus lobe, small thorn-like lateral process at three-quarters. Subscaphium broad, not heavily sclerotized. Juxta, if present, not separable from valve which is large, heavily sclerotized, with four processes from steep internal surface, all almost reaching tip of valve which is slightly curved inward. Transtilla narrow; labides a pair of appressed lobate processes dorsal to aedeagus [description of transtilla and labides doubtful owing to damage of preparation]. Aedeagus curved, short, stout, tapered from three-quarters.

GENITALIA ♀. Eighth sternite narrow, lightly sclerotized medially, U-shaped posterior medial emargination, line of setae at posterior margin; about eight setae scattered from one-third to posterior margin on each side. Ostium small, anterior, pouch-like; antrum constricted at three-quarters posteriorly, only lightly sclerotized; narrow hemi-cylindrical dorsal sclerotized region on ductus bursae one-quarter length of antrum (see 'Remarks'). Ductus bursae with fine regular constrictions overlaid with fine pimpling, appearing rugose. Corpus bursae double length of ovipositor, narrow and tapering posteriorly. Eighth tergite rather square with line of setae at posterior margin, conspicuous heavily sclerotized ridge arched posteriorly from anterior corners; anterior to ridge a series of six parallel transverse ridges; anterior margin reflected posteriorly to form shallow pouch.

REMARKS. This is a bizarre species which differs from all other *Tinissa* species in several features: like *T. polystacta* it has a five-segmented maxillary palp but is much larger. It lacks the distinctive oblique dark bands on the outer surface of the mid tibia and the tarsal spotting common in other *Tinissa* species. Males are recognizable by their sharp uncus lobes with parallel lateral processes and the cluster of sharp peaks of the valval processes. *T. cultellata* is the only *Tinissa* species in which the juxta cannot be visually separated from the valve and may

not even be present. Females are characterized by the very small anterior ostium and short antrum and ductus bursae. Ventral sclerotization of the ductus bursae (see below) and the ridging of the eighth tergite are peculiar to this species. Affinities are vague and are to the other divergent African species, *T. polystacta* (five-segmented maxillary palpus, shape of aedeagus and uncus) and *T. poliophasma* (rugose regular constrictions of the ductus bursae). The ventral sclerotization of the ductus bursae of *polystacta* may be homologous with the dorsal sclerotization of *cultellata*; in *cultellata* sclerotization is anterior to the point of junction with the ductus seminalis and is thus not a colliculum although it bears a striking resemblance to one. Both male genitalia preparations of this species are in poor condition.

DISTRIBUTION. Uganda (Ruwenzori Range).

#### MATERIAL EXAMINED.

UGANDA: 1 ♀, 1 ♂, Ruwenzori Range, Mahoma River, 6700', 13-16.viii.1952 (Fletcher) (genitalia slide nos. 8462 [Gozmány], 12115 [Robinson]; BMNH).

### LEPTOZANCLA Meyrick

*Leptozancla* Meyrick, 1920, *Voyage Ch. Alluaud R. Jeannel Afr. or. 2*, Microlepid. : 107. Type-species: *Leptozancla talaroscia* Meyrick, 1920, *ibidem* : 108, by original designation and monotypy.

*Leptozancla* Meyrick; Fletcher, 1929 : 125 [type-species].

*Philagrias* Meyrick, 1932, *Trans. ent. Soc. Lond.* **80** : 119. Type-species: *Philagrias zelotica*

Meyrick, 1932, *ibidem* **80** : 119, by monotypy. [Synonymized by Gozmány & Vári, 1973 : 87.]  
*Leptozancla* Meyrick; Gozmány & Vári, 1973 : 87 [redescription].

Presence of mandible uncertain – head preparation not made owing to lack of available material. Maxillary palpus five-segmented, folded. Antenna extending to, or almost to, tip of fore wing, with dense whorl of cilia on each segment, cilia length equal to width of segment (*L. talaroscia*) or without cilia (*L. zelotica*). Fore wing narrow, apex oblique (*talaroscia*) or shorter, broader, resembling *Tinissa* (*zelotica*), 8.5–12.0 mm long; *M* present in cell; *R*<sub>5</sub> just posterior to apex; *R*<sub>4</sub> and *R*<sub>5</sub> separate. No elongate oval patch of small, flat, ovate scales on under surface of fore wing between *A*<sub>1+2</sub> and posterior margin and no opposing rough scale patch on hind wing. Hind wing with *M* present in cell. Hind tibia with broad, rough, appressed scales, few sparse raised scales proximally (hind tibia of *talaroscia* unknown).

GENITALIA ♂. Corema of similar type to *Tinissa* present in eighth segment but reduced and without hairs in *L. talaroscia*. Saccus large, triangular or rounded apically. Vinculum broad, exceptionally so in *L. zelotica*. Uncus fused with vinculum in *zelotica*, narrow membranous zone between the two in *talaroscia*. Uncus lobes connected by sclerotized bridge in *zelotica*. Juxta large, well developed, with distinct ventral suture or sulcus in *zelotica*. Valve absent. No equivalent to process arising from membrane between valve and juxta as present in most *Tinissa* species. Labides and transtilla highly developed, labides forming elongate, posteriorly directed spines. Subscaphium narrow, short (*talaroscia*) or broad and elongate (*zelotica*). Aedeagus short and rather broad, exceptionally so in *zelotica*.

GENITALIA ♀. Unknown.

### *Leptozancla talaroscia* Meyrick

(Pl. 6, fig. 43; Pl. 10, fig. 65)

*Leptozancla talaroscia* Meyrick, 1920, *Voyage Ch. Alluaud R. Jeannel Afr. or. 2*, Microlepid. : 108.

Lectotype ♂, KENYA: Mt Kenya, alpine grassland and tree-heath, 3300–3500 m, i–ii. 1912 (*Alluaud & Jeannel*) (genitalia slide; MNHN, Paris) [not examined].



*Leptozancla talaroscia* Meyrick; Viette, 1951 : 83 [lectotype designated].

*Leptozancla talaroscia* Meyrick; Gozmány & Vári, 1973 : 87, fig. 229 [redescription].

♂. 25 mm. Head whitish, dark brown near eyes. Labial palpus whitish, first and second segments flecked with brown on outer face. Antenna as long as forewing, light brown, first flagellar segment darker, tip of scape whitish, pecten dark brown; cilia dense, as long as width of flagellar segments. Thorax and tegula dark brown, posterior margins white. Fore wing [rubbed] dark greyish brown, traces of whitish spots at costa; fringe mixed whitish and greyish. Hind wing pale grey; fringe white. Legs rubbed and damaged; fore and mid legs ochreous-whitish with few sparse brownish scales above.

♀ unknown.

GENITALIA ♂ (Pl. 10, fig. 65). Corema absent from eighth segment but shallow pocket with thin, sclerotized bar at base present in tergo-sternal membrane. Saccus broad, rounded. Uncus fused with vinculum, short and broad, rounded lateral projections at four-fifths. Juxta very large, elongate, projecting posteriorly, with deep rounded posterior emargination; dorsally with pair of curved, stout processes [one with tip broken in illustrated preparation]. Transstilla fused with dorsum of juxta and supporting labides, four elongate, posteriorly directed spines, central pair supporting sclerotized strip reflected anteriorly; subscaphium short, not connecting with anterior extension of labides. Aedeagus short, stout.

REMARKS. *L. talaroscia* is a larger and narrower-winged species than *L. zelotica* in which the juxta has a distinct medial ventral suture and a pair of small finger-like processes at the tip and a pair of lateral flaps. The labides are in the form of only a pair of posteriorly directed spines in *zelotica*.

DISTRIBUTION. Kenya (Mt Kenya).

#### MATERIAL EXAMINED.

Paralectotype ♂, KENYA: Mt Kenya, 11500', i. 1912 (*Alluaud & Jeannel*) (genitalia slide no. 12116 [Robinson]; BMNH).

### *Leptozancla zelotica* (Meyrick)

(Pl. 6, fig. 44; Pl. 11, fig. 66)

*Philagrias zelotica* Meyrick, 1932, *Trans. ent. Soc. Lond.* **80** : 119. Holotype ♂, ETHIOPIA: Djem-Djem Forest, c. 8000', 5-7.x.1926 (*Scott*) (genitalia slide no. 10177 [Gozmány]; BMNH) [examined].

*Leptozancla zelotica* (Meyrick) Gozmány & Vári, 1973 : 88, fig. 231 [new combination, redescription].

♂. 18 mm. Head [very rubbed] whitish, brown scales around eyes. Labial palpus ochreous-whitish, blackish brown above and on outer surface of first and second segments, terminal segment with slight brownish flecks on outer surface. Antenna, including scape, ochreous, two-thirds length of forewing, cilia absent, pecten brownish. Thorax and tegula brownish, tegula white posteriorly. Fore wing badly rubbed, some blackish brown scales remaining, traces of yellowish cream spots at costa; fringe mixed grey and whitish. Hind wing light brownish grey; fringe whitish. Legs ochreous flecked with brownish above. Mid tibia with two very broad oblique dark brown bands on outer face, first to third tarsal segments with diffuse brown spot above. Hind tibia [?rubbed] with broad, ochreous appressed scales above, few protuberant scales towards base; second to fourth tarsal segments with diffuse brownish spot above.

♀ unknown.



GENITALIA ♂ (Pl. 11, fig. 66). Corema present in eighth segment. Saccus triangular, vinculum very broad dorsally. Uncus lobes short, fused with vinculum, joined to each other by narrow dorsal sclerotized bridge. Subscaphium broad. Juxta with medial suture ventrally, elongate, distal half with two broad lateral flaps; tip of juxta terminating in two slightly curved finger-like processes. Dorsal surface of juxta with two heavily sclerotized pouch-like recesses. Labides fused with juxta via transtilla; reflected dorsally and anteriorly, then tapering posteriorly as elongate spines with broad, spur-like processes at one half. Aedeagus short and stout, extensive zone of microtrichia at tip.

REMARKS. The antennae of *zelotica* are shorter than in *L. talaroscia*, not thickly ciliate; the wings are narrower and less elongate. The structure of the juxta and labides separates the two species and *talaroscia* does not have a sclerotized 'bridge' between the uncus lobes.

DISTRIBUTION. Ethiopia.

MATERIAL EXAMINED.

Holotype only.

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## INDEX

Synonyms are in *italics*; principal references are in **bold**.

- albipuncta sp. n., 264, 266, 274, **275**  
 amboinensis sp. n., 259, 264, 265, 267, 268,  
**269**, 273  
 araucariae sp. n., 266, **273**, 274, 275
- bakeri sp. n., 264, 281, 283, **284**, 285, 292  
 baliomicta Meyrick, 263, 264, 265, 270, 271,  
 277, 278, 279, **280**, 281, 282, 283, 284
- chalcites sp. n., 264, 266, 273, **274**, 275  
 chaotica sp. n., 257, 261, 263, 266, **271**  
*chloroplocama* Meyrick, 273, 278, 285, 286  
 cinerascens Meyrick, 259, 264, 265, **267**, 268,  
 269, 270, 271, 272  
 convoluta sp. n., 266, **272**  
 cultellata Gozmány & Vári, 261, 262, 264,  
 266, 267, 295, **296**, 297
- distracta Meyrick, 259, 264, 265, 268, **269**,  
 271, 272  
 dohertyi sp. n., 265, 279, **284**
- errantia sp. n., 264, **270**, 272, 281  
 eumetrota Meyrick, 266, **275**
- Gelechia Hübner, 283  
 goliath sp. n., 265, 286, **287**, 288
- heterograpta* Meyrick, 277, 278, 279, 280
- indica sp. n., 257, 264, 265, **282**, 284, 285  
 insignis Zagulajev, 266, 279, **288**  
 insularia sp. n., 257, 263, 264, 265, **285**, 286,  
 287
- kidukaroka sp. n., 265, 279, **287**, 288  
 krakatoa sp. n., 257, 259, 265, **267**
- Leptozancla Meyrick, 255, 257, 259, 261, 263,  
 296, **297**
- mysorensis subsp. n., 265, 293, **294**
- palmodes Meyrick, 263, 266, **272**, 276  
 parallela sp. n., 264, 266, 278, 279, **281**, 282,  
 286, 288  
*perilithias* Meyrick, 266, 295  
*Philagrias* Meyrick, 297, 298  
 philippinensis sp. n., 266, 276, **277**, 281  
 phrictodes Meyrick, 257, 261, 264, 265, **289**  
 poliophasma Bradley, 261, 265, 266, **290**,  
 291, 297  
*Polymnestra* Meyrick, 266, 295  
 polysema Zagulajev, 266, **276**, 277  
 polystacta Meyrick, 257, 261, 263, 264, 266,  
 267, 289, **294**, 295, 296, 297
- rigida Meyrick, 257, 264, 265, **277**, 278, 279,  
 280, 281, 282, 283  
 ruwenzorica Gozmány & Vári, 259, 261, 263,  
 266, 290, **292**, 293
- Scardia Treitschke, 294, 295  
 spaniastra Meyrick, 260, 261, 264, 265, 266,  
**291**, 295
- talaroscia Meyrick, 257, 261, 263, **297**, 298,  
 299  
 Tinissa Walker, 255, 257, 261, 263, **266**  
 Tinissinae Gozmány & Vári, 255, **261**  
 torvella mysorensis subsp. n., 265, 293, **294**  
 torvella torvella Walker, 262, 265, **293**, 294  
 torvella Walker, 257, 259, 260, 261, 262, 263,  
 266, 285, **292**  
 transversella Walker, 265, **283**, 284
- zelotica Meyrick, 261, 263, 297, **298**, 299

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